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Archives of Dermatology and Syphilology

VOLUME 18 NOVEMBER, 1928 NUMBER 5

THE AFFINITIES BETWEEN BLACK TONGUE AND TRICHOMYCOSIS*

FRED D. WEIDMAN, M.D.

PHILADELPHIA

The sense and scope of the affinities between black tongue and trichomycosis cannot be fully unfolded without at least some discussion of the two diseases. It would be superfluous for this paper to re-record the more or less ancient history of either; that of black tongue was sufficiently unfolded before the section on Dermatology and Syphilology in June, 1928, by Heidingsfeld.[1] He found only 100 cases reported in the literature, but rightly stated that there were, of course, many others which were not reported because they added nothing to the knowledge. Almost nothing of importance has been added since that time. Indeed, he still appears to be the only author who has ever made a study of histologic sections of the entire lingual mucosa; although Vollmer's [2] article intimated that he had employed histologic methods, they were confined to avulsed "hairs."

Trichomycosis, too, while a comparatively recent subject, particularly in regard to its scope and limitations, has been fully discussed by Castellani [3] and Macfie,[4] in both British and American periodicals. Under these circumstances, an attempt will be made to confine this paper to phases of the subject which have to do with the affinities in the case. Occasion will be taken, however, to compare the observations in my case which have a controversial bearing with those of others.

The connection between these apparently remote conditions was suggested in a most unexpected way during an investigation of a thread organism which occurred in a case of "black tongue" in a human being; and the outstanding development of the entire experience was the occurrence of minute nodules on the axillary and facial hairs of a

* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

* From the Laboratory of Dermatological Research, University of Pennsylvania.

1. Heidingsfeld, M. L.: Hairy or Black Tongue, J. A. M. A. **55**:2117 (Dec. 17) 1910.

2. Vollmer: Histologic Notes on a Case of Black Tongue, Arch. f. Dermat. u. Syph. **46**:12, 1898.

3. Castellani, Aldo: Fungi and Fungous Diseases; Lecture III, Arch. Dermat. & Syph. **17**:194 (Feb.) 1928.

4. Macfie, J. W. S.: A Fourth Variety of Trichonocardiasis, with a Note on the Cultivation of Nocardia tenuis, Ann. Trop. Med. **10**:283, 1917.

monkey which had been fed with a culture of the thread in an attempt to reproduce black tongue. This was a genuine laboratory surprise. If there was any doubt as to the validity of the disease on the hairs in the axilla and its connection with that in the mouth from the simple dermatologic point of view, it was speedily dispelled on microscopic examination of the two lesions. Etiologically speaking, the particular point which clinched the matter of the identity of the conditions of the tongue and the hair was not only the presence of the same micro-organism in the affected parts but also a similar arrangement of the micro-organism. Or, more properly speaking, there was a similar mode of invasion on the part of the micro-organism toward the tissues affected; a similar morbid anatomy.

It seems a far cry, indeed, from a disease on such a situation as the tongue to that in the axilla; yet the connection is not any more remote than that of other bacterial diseases which may affect both the mouth and the integument elsewhere. It is fully realized that it would not be surprising to find an organism of the sort described in this paper in a place such as either the mouth or the axilla, if it occurred only in either one or the other. When, however, the disease on the hairs of the monkey took place under the artificial conditions just noted, and when, furthermore, the same morbid anatomy was reproduced in the two positions, it was felt that the identity of the two conditions could not be questioned, at least as it occurred in this experience.

The fact that the micro-organism occurred on the tongue only under a condition of hyperkeratosis lends a certain additional weight to the circumstance; it appears that the micro-organism is favored by a substrate of keratin such as occurred both in the hair of the monkey and on the tongue of the man.

REPORT OF CASE

History.—A. F., an obese white man, aged 63, had had diabetes to his knowledge for eighteen months. He was referred to the skin department because of an eruption in the axillae, under the breasts and in the groins, which turned out to be erythrasma; a thread organism resembling *Microsporon minutissimum* was demonstrated. The lesion of the tongue was located in the classic position, on the posterior half of the tongue, and consisted of a poorly circumscribed, brownish patch, which might readily have been regarded as the effect of an accumulation of mucus and saliva, stained by the tobacco which the patient used inveterately. Only after the saliva had been scraped away could the hairs be distinguished. When this was done, the main part of the lesion was found to be located around the circumvallate papillae, and the hairs extended fully 10 mm. above the surface, in some cases. They were dark brown—not black. The tongue elsewhere exhibited definite white elevations which comprised the conical papillae. All the teeth had been extracted many years previously and had been replaced by false teeth, which had a bearing on one of the theories of causation (Prinz[5]); namely, that the black

5. Prinz, H.: Diseases of the Oral Mucous Membrane and the Tongue, Dental Cosmos. **69**:53, 1927.

color was caused by hemorrhages around the teeth. The gums were carefully examined after the removal of the false teeth, and bleeding points were not found. Furthermore, the patient said that to his knowledge there had never been any bleeding from the teeth or gums.

The patient was unaware as to just how long the tongue had been black, but he gave the impression that it had been so for a number of years. He said that he had been chewing tobacco since he was 8 or 9 years of age. He did not complain of discomfort.

Laboratory Examinations.—Hairs examined directly, mounted in water under the coverslip, gave a surprisingly close reproduction of the structure of hair, assuming that the latter had been macerated in the mouth and that the fibers of the cuticle had become more or less loosened. The appearances were identical with those detailed by Heidingsfeld. They consisted of closely compacted ropes of chitinous epidermal scales the outlines of which could be made out in general in the denser central parts, and the margins of which flared outward in the periphery

Fig. 1.—Black tongue.

and gave a more or less imbricated effect, so well described and figured by Heidingsfeld. Some of the coarser hairs were split into Y's, or even split in the middle without the sections becoming separated. A dark brown, evidently soluble pigment diffusely stained the hairs; granules could not be made out. Applied to the exterior of the hairs were great numbers of minute coccus-like bodies and short streptothrices; there were also numerous specimens floating free in the surrounding fluid. Other organisms were not apparent in any numbers; there appeared to be a striking example of pure culture, so far as simple observation could determine, and so far as one would imagine it could occur in a place like the mouth.

Much more was learned from hairs placed in a weak solution of crystal violet and examined directly. Various organisms—short, thick leptothrices, thick bacilli and small cocci—were found associated with the streptothrices. The cocci occurred in solid masses or clumps. The thread (*Streptothrix*), which has been mentioned before, was found more sparingly in this particular preparation, but could be readily identified because it took the stain so much more faintly than the other

(*Leptothrix buccalis?*) organism; furthermore, it occasionally had a wavy contour and frequently stained irregularly. Occasional branchings were found, but they were not numerous.

When this preparation was dried and mounted, the organisms shrank to but a small fraction of their original size; the resemblance of this streptothrix became even closer to that which was studied in cultures and which will be described later.

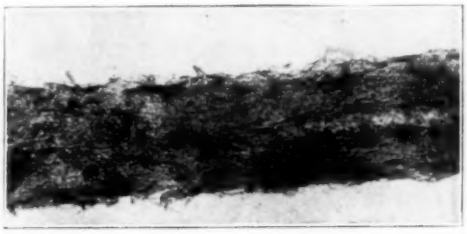

Fig. 2.—Hair taken directly from the tongue and examined in toto, showing imbricated effect.

Fig. 3.—Entire hairs from tongue showing branchings.

Teasing Tests.—In addition to the isolated hairs, some coarser and larger particles were secured by pulling on the deeper part of the black patch. Under the microscope, these were found to consist of a denser basal arrangement of more or less keratinized cells, and from the surface of this thicker mass the hairs already described were extending upward. None of the submucosa was included in the material. Attention was then paid particularly to the denser portion of the clump from which the hairs were developed. When this was done, it was possible to resolve the mass into two kinds of cells; first, longer and more vital ones, which were arranged in parallel strands and which, in turn, became arranged into

elongated fasciculae. Gradually extending outward from these fasciculae, and lying between them, occurred the second, more keratinous kind of cell. These became more and more keratinized until, in the extreme periphery of such a fasciculus, the cells no longer had the fasciculated arrangement, but, joined up and merged with similar cells from an adjoining fasciculus, they produced a general cobble-stone or rubbly appearance. As long as these fasciculi remained adjacent to each other, and separated from each other only by this rubbly type of cell, the hairy appearance was not evident. Alternating perpendicular strata of keratinized and nonkeratinized cells were apparent; the rubbly keratinized forms served as a filler between the more vital, elongated forms. That this rubbly type of cell was an extremely imperfect kind of cementing substance could be deter-

Fig. 4.—Distal extremity of one of the hairs.

mined by compressing the clump of material as it lay under the coverslip or by actually teasing the fasciculi apart with needles under the microscope. When the fasciculi were thus dissociated, the hairs resulted that have already been described.

It is necessary, therefore, in explaining the genesis of the hairs of hairy tongue, to realize that the hairs do not start as such, but that they start as plaques of acanthosis. In these plaques, the process of keratinization does not take place uniformly as it does, for instance, in leukoplakia or in other keratinizing processes of the integument proper; at certain points normal keratin metabolism does not take place and is responsible for the development of papillae, whereas all around it a hyperkeratotic process does occur. The fibrous kind of cells serves as a core around which the keratotic cells are arranged. It is only on the

surface, where erosion of the looser (keratinized) cells can take place, that the hairy appearance ensues. This explains, in part, why the hairy appearance became marked only on the patient's tongue after the removal of the saliva with a cotton swab; that is, this procedure dragged away the macerated keratinous substance, which intervened between the hairs, at the same time that the saliva was removed. Perhaps some of the forms that have been described in the past as "smooth," that is, black but not hairy, would have become hairy if treated with the cotton swab.

The process just described, may, in a general way, be compared with the normal development of the papillae of the tongue; that is, on the basis that there are exceedingly closely placed papillae developing in an

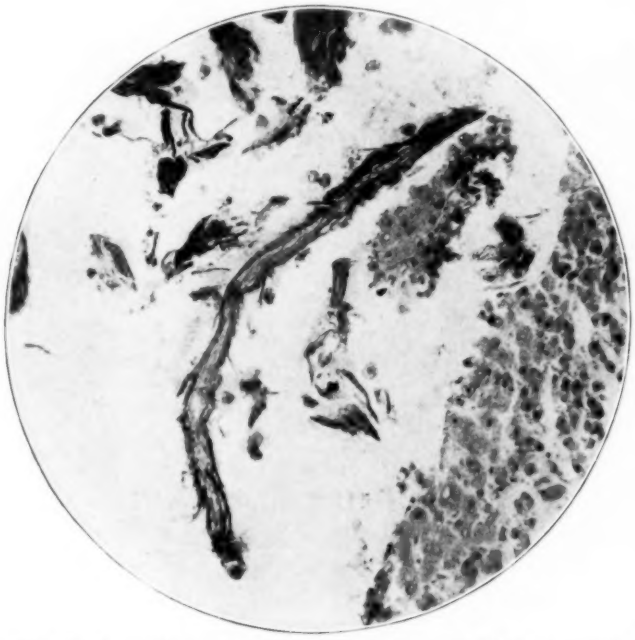

Fig. 5.—Histologic section of hair from tongue (embedded in a piece of liver to facilitate handling), showing detachment.

abnormal manner. They vary from the normal in that there is not a central core of connective tissue, and in that they are abnormally closely placed—so much so that their peripheral, more keratinous parts, fuse.

Histologic Sections.—It was not expedient to perform a biopsy on the tongue, but some of the hairs were studied in sections. By embedding them in a deep incision in a piece of liver, and then by carrying the entire specimen through the usual paraffin technic, it was possible to manipulate histologically such small and delicate structures as these hairs and to obtain quite satisfactory sections.

As sectioned longitudinally, the larger examples of hairs were found to consist of a central core of rather well preserved squamous cells, whereas in the periphery

they consisted of a brown substance which was keratinous and which might be considered as corresponding to the stratum corneum of the general integument. The brown color was much stronger immediately under the coccoid bodies in the extreme periphery of the hair, and at the tips of the hairs. The imbricated effect, already mentioned for entire hairs, was repeated in the sectioned ones, and was found to be referable to the splitting of the peripheral-most lamellae of keratin.

Frequently, a thick stratum of coccoid bodies was applied to the exterior of the hairs, which, in places, could be resolved into a radially striate arrangement. Indeed, radial filaments could be discerned on closest search. Transversely sectioned hairs showed the peripheral zone of coccoid bodies and the radiostriate effect to much better advantage than the longitudinally sectioned hairs.

The more delicate hairs showed the same features as the coarser hairs, except that the better preserved squamous cells of the axis were missing. The axis of the delicate hairs consisted solely of a dense, hyaloid, keratinous substance.

Prussian Blue Stain for Iron (Perl's Test).—This test was performed because of the persistent clinical reports concerning iron medication in connection with

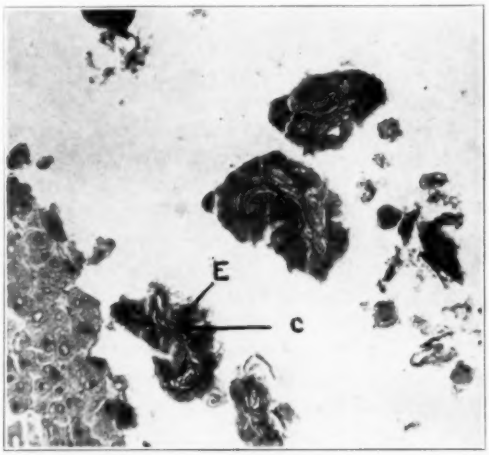

Fig. 6.—Transverse section of hairs (embedded in piece of liver to facilitate sectioning). Central core of hair at *C;* mantle of streptothrices at *E.* Some detached streptothrices are seen at the upper edge of the hair.

black tongue, and for the purpose of testing for iron pigment. There was a faint but definite blue tint to the streptothrix masses which encased the hairs. In addition, there were minute spheroids, some closely embedded in the sides of hairs, which stained strongly blue, and from which short, blue-stained streptothrices radiated. Sometimes the appearance was asteroid. I [6] have had previous experience in which the fungus substance stained blue by the Perl technic in connection with hemorrhagic sarcoma of Kaposi. It is known that the composition of fungicellulose varies, depending on its substrate, and that substances will appear in it when abundantly present in the substrate, which otherwise would not; and in the case of Kaposi sarcoma the absorption of hematogenous iron certainly was

6. Dillard, J. G., and Weidman, F. D.: Multiple Hemorrhagic Sarcoma of Kaposi, Arch. Dermat. & Syph. **11**:203 (Feb.) 1925.

responsible for the blue reaction. Yet, I have not been able, even though iron is put down as one of the common constituents of fungicellulose, to demonstrate it by the Perl test in the grosser dermatophytes even after long growth on blood medium. The more densely keratotic and deeply pigmented portions of the hairs were but slightly more blue than others. It does not appear that the pigment itself contains iron. Unfortunately, steel instruments had been used several times in securing and transferring the materials, and it is not proper to draw final conclusions from this experience alone.

It appears from the foregoing facts, then, that the hyperplastic changes were confined to the stratum corneum and prickle-cell layers of the tongue; it is recognized that the material examined was procured in such a way as to prevent the fullest pronouncements in this respect, and that the conventional biopsy would demonstrate something additional and perhaps different.

Cultures.—Plantings were made on several different mediums, but at first nothing could be obtained in smears from the resultant colonies, except cocci and bacilli. The thread organism was finally recovered from a Sabouraud conservation slant which had been kept for four months. The plantings originally made had developed into a thick, pasty streak, which was heaped in the center. But from the margin of these streaks, at the expiration of four months, some extremely delicate, hairlike lines could be discerned passing laterally, both on the surface and deeper in the substance of the agar. The medium around these lines was dark—in some places almost black—and it was more this than the lines themselves that attracted attention and resulted in the identification of the lines. Pickings from these hairlike lines showed that they were pure cultures of what appeared to be a short bacillus, but it was realized that bacilli in chains may really be streptothrices, the segments of which have become dissociated, and that streptothrices can be responsible for the hairlike lines; subcultures were accordingly made from these hairlike extensions. Pure cultures were finally secured, and subcultures from a six-day old agar culture were used for further tests and for reporting out the following cultural characteristics of this organism. These cultures were incubated at 35 C.

Nutrient Agar.—In twenty-four hours, the colony appeared as a semitranslucent, iridescent, slightly elevated streak, faintly bluish white, with a smooth, glistening surface and even margin; that is, like some bacillary colonies.

Even at this early period (it will be recalled that this colony was grown at 35 C.), a slightly brown color had developed in the substrate. In forty-eight hours, on superficial examination, it appeared that the margin of the streak was serrate, but on finer examination, it was found that it was delicately lobose, as the result of the development of minute circumscribed colonies which had developed at the extreme margin of the main streak and whose peripheries were projecting outward beyond the streak proper. In seventy-two hours, the edges of the streak had become wavy—the waviness being referable to a further extension (but grosser) of the marginal colonies already mentioned. The marginal colonies were translucent, and the central parts of the main streak were more opaque. Again, when viewed at a distance, the edge of the streak appeared radiate or serrate, and it was only on closest examination that its real lobular nature was made out. However, with a hand lens, extremely minute, hairy filaments could be seen extending outward from the lobulations. This was a most distinctive and most

valuable appearance, together with the brown discoloration of the substrate, in the identification of the organism. In thirteen days, the appearances were practically the same, provided the streak was examined by transmitted light, but by this time the serration had become replaced by minute circumscribed colonies, so that a delicate translucent beading extended in an undulatory line along both margins of the streak. These features were made out only with the greatest difficulty by reflected light—transmitted light was much better. The substrate at this time was definitely brown.

Gelatin.—Gelatin was not liquefied (tests were performed up to thirteen days).

Bouillon.—At the end of twenty-four hours, there was a definite diffuse turbidity. When the tube was merely lifted, there was a scanty diffuse pellicle which fell to the bottom of the tube, and only a moderate amount of sediment was present. At the end of thirteen days, a thin but definite pellicle had developed; there was a peripheral ring on the walls of the tube at the surface, with marked turbidity and moderate amounts of sediment.

Litmus Lactose Agar.—The reaction did not change.

Litmus Milk.—In twenty-four hours, there was an alkaline reaction at the surface. After forty-eight hours, the upper half of the milk was alkaline. In five days, the milk had become entirely decolorized, but was not coagulated. At the end of nine days, one fourth of the milk had become coagulated, and at the end of thirteen days, the appearance had not changed from that of the nine day period.

Potato.—In twenty-four hours, a thin, broad, pale brown growth, with a glistening surface, had developed along the streak. This had not changed to any extent up to the thirteenth day.

Petroff Medium.—In thirteen days, this medium was almost liquefied and was discolored a dark brown.

Behavior Toward Carbohydrates.—Neither acid-formation nor gas-formation occurred in dextrose, saccharose, galactose, salicin, lactose, maltose or mannite, in spite of the fact that there was a marked turbidity in all of the test tubes. A pellicle was rarely seen; that is, one developed on one of the two dextrose tubes and on one of the two galactose tubes. The ring at the surface was likewise only faintly and irregularly developed, i. e., on one dextrose tube, one galactose tube and two galactose and saccharose tubes. It will be seen from this that the organism is not at all energetic in its behavior toward the carbohydrates.

Summary and Comment.—The most distinctive growth occurred on ordinary bacteriologic peptone agar (not so well on Sabouraud's dextrose agar), the distinctive features being the brown discoloration of the medium, the thin iridescent qualities of the colony, the presence in forty-eight hour cultures of minute subcolonies at the margin of the streak and the finely serrated margins of the latter.

Most of the foregoing tests were repeated several months later, and, as far as they went, the same results were obtained.

Appearance in Stained Preparations.—The stained smears from twenty-four hour agar cultures disclosed only short rods; at times two or three of these were joined together, end to end. The forms of *Streptothrix* were first demonstrable only in preparations made from three-weeks old nutrient bouillon cultures. The threads were delicate as stained by most of the dyes (toluidine blue and crystal violet), but were heavier, as usual, when stained by Gram's method. They were frequently slightly wavy or even markedly curled. They generally broke up into

short segments which were indistinguishable from bacilli in chains; frequently, there was "absorption of cytoplasm" of some of the segments, so that only the "ghosts" appeared. As this resorption occurred, fine grains of fungus substance were left in situ—coccoid bodies of extremely minute size.

The best preparations were obtained when a loopful of an old, turbid bouillon culture was gently laid on the slide and allowed to dry without further distribution. In this way, the thread forms were not stirred up further and dissociated into their segments. When treated in the latter way, the segments became indistinguishable from bacilli. In younger preparations in bouillon (eight day old), thread forms could not be found—nothing but bacilli. At this time, however, many of them stained palely and were clearly degenerated. A goodly proportion, however, stained excessively deeply—much more so than in any other culture medium. At times, one end of the thread would be attenuated, as occurred commonly in the filaments in the more peripheral parts of colonies of the higher fungi.

Fig. 7.—Old bouillon culture of black tongue organism, showing example of fine filaments, coarse filaments and bacilliform filaments.

One preparation differed from all the other old bouillon cultures. Thus, some of the threads were fully twice the diameter of the others, and stained deeply blue with a weak, watery solution of basic fuchsin, whereas the overwhelming preponderance of other filaments stained faintly pink. At times, these thicker examples were traceable into clubs, and at others into the more palely-staining pink forms; hence there cannot be any cavil about purity of culture. Furthermore, in this particular preparation, there were numerous examples of sharply curved filaments, both of the delicate and of the coarser varieties, and this at times took place so sharply that the filament described a semicircle or even a complete circle. The appearance of this preparation was thus most distinctive by reason of the circles which dotted it so profusely. It may be that this phenomenon was referable to some peculiarity in the circumstances attending the drying out and fixation of the preparation, or there may have been a mutant colony which happened to be included in that particular loopful of material. It was seen only once in five films thus prepared. It is, therefore, not a sufficiently constant character, although distinctive and inviting, for differentiation and for the erection of a new species. It is a phenomenon which I have never encountered before, either in the actual preparation or in published records.

Branching Forms.—These were seen only in old bouillon, and were not seen at all when the bouillon was smeared over the surface of the slide. The lateral branches were never numerous and it was necessary to search for them more or less exhaustively. It was necessary, for instance, to examine a score or more of fields before any branching forms were located. The branches were always short and extended perpendicularly from the parent stem.

Staining Reaction.—In general, this was a faintly-staining organism. The weak, aqueous, basic fuchsin stain, such as is commonly employed for various thread organisms, was not nearly as useful as the crystal violet. The organism was gram-negative in the more chitinous peripheral portions of the hyphae, but positive for the metachromatic substance of the interior. It was not acid-fast, in either young or old subcultures.

DETERMINATION OF SPECIES

For an exhaustive study, the organisms that would have to be taken into consideration in differentiating the strain which I isolated should include those threads which have been found in connection with conditions in the mouth, in structures adjacent to the mouth and in the axilla; these are, more particularly, the ones related or supposedly related to black tongue, lepothrix (including trichomycosis), and perhaps erythrasma. This has been done so far as the literature will permit. The irrelevant observations will not be detailed. It will clarify matters if it is understood at the outset that *Nocardia, Oospora, Discomyces, Streptothrix* and *Actinomyces* are all members of the thread organism group; the different terms have value in respect to the classifications championed by different systematists and will not be elaborated.

In relation to black tongue, *Oospora lingualis* and *Oospora pulmonalis* already have been held forth as causative. A filiform bacillus has been described by Dinkler,[7] but I find on referring to the original that the filaments figured are not continuous (threads), and that the organism probably was a bacillus, as claimed by the author. In any event, the description is not adequate enough to apply to my cases, and Dinkler's organism may be at once disposed of.

Rostojew's [8] *Cladothrix* cultures were more or less deeply pigmented —one was completely black. Since branchings such as occurred in my organism were fully developed, it may well be that Rostojew was dealing with the same; but, regarding the branches as false, he assigned his strain to *Cladothrix*.

Oospora lingualis (Gueguen, 1908).—Culturally, bacilli in chains were reported in this form,[9] just as they may be found in any of the thread organisms. In addition, there were chains of conidia of the type

7. Dinkler, M.: The Pathology of Black Tongue and an Analogous Affection of the Lingual Mucosa, Virchows Arch. f. path. Anat. **118**:46, 1889.

8. Rostojew, N.: Bolnitsch. Gaz. Botkina, no. 8, pp. 156, 182, 207, 226 and 249; über die schwarze Haarzunge; abstr. in Monatsheft. **24**:41, 1897.

9. Brumpt, E.: Precis de Parasitologie, ed. 3, Paris, Masson & Cie, 1922, p. 980.

of *Oospora* as well as chlamydospores and spirals. The latter feature is particularly pertinent in respect to my strain, in which it will be recalled that certain circular forms made their appearance in one of the preparations. Brown pigmentation was not mentioned, however, and, all things considered, I feel that this organism may be disposed of, particularly since it is classed among the "majora" group of *Discomyces,* which are easy to cultivate and supposedly are saprophytic.

Oospora pulmonalis (Roger and Sartory,[10] *1909).*—This organism was similar to mine in that it was difficult to isolate, that it was not a free grower and that the filaments were frequently highly curled. It was responsible for a pseudotuberculosis of the lung. That is, it was definitely pathogenic and, under such circumstances, should have induced disease in the three monkeys which were fed with such large quantities of cultures. Nothing was said concerning the brown color. It is certain that this organism likewise may be eliminated from consideration as the one concerned in my case.

This species is illustrative of the wandering possibilities of oosporas of the mouth; Sartory and Scheffer [11] reported it in a case of black tongue which was followed by pseudotuberculosis of the lungs and caused by the same species. The case was clearcut, because there was a two year interval between the two examinations, during which time the patient lost 28 pounds (12.7 Kg.), and because the patient was cured by iodides.

There are numerous other *Nocardias* which should be taken into consideration because they inhabit the mouth or its environment. *Nocardia berestneffi* [12] has been described from a case of pseudotuberculosis of the lungs, and *Nocardia londonensis* in an abscess of the tongue, but I have not been able to find the original references. It will be recalled that lachrymal calculi are caused by *Nocardia foersteri.*[13] These were cultivable only anaerobically after several days in the incubator, and developed arthrospores. Nothing was mentioned about pigment. This species also may be eliminated from consideration.

Nocardia nigra [14] from the tonsil produced a black colony, whereas mine was brown; furthermore, *Nocardia nigra* liquefied gelatin.

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10. Roger and Sartory: The Oösporoses, Arch. de méd. expér. et d'anat. path. **21**:229, 1909.

11. Sartory, A., and Scheffer, M. L.: Pneumomycosis and Black Tongue, Bull. acad. de méd., Paris **87**:339, 1922.

12. Chalmers, A. J., and Christopherson, J. B.: A Sudanese Actinomycosis, Ann. Trop. Med. **10**:223, 1916. Roger, Bory and Sartory: Les Oösporoses, Arch. de mal. expér. et d'anat. path. **21**:229, 1909.

13. Axenfeld, T.: The Bacteriology of the Eye, English translation by McNab. London, Ballière, Tindall & Cox, 1908, p. 290.

14. Castellani, Aldo, and Chalmers, A. J.: Manual of Tropical Medicine, ed. 3, New York, William Wood & Company, 1920.

Passing now to the cases of trichomycosis, the only organism to be disposed of is *Nocardia tenuis* of Castellani. This fungus appears to have been cultured only once, by Macfie.[4] He found branching forms quite different from those which occurred in my cultures; in the case of *Nocardia tenuis,* the branchings were frequent and occurred at other angles than the right angles which were seen in my strains.

The other axillary organism to receive attention is *Microsporon minutissimum.* This organism is neither a microsporon nor a bacterium, but is a thread organism; this species must receive close examination, in view of the fact that my patient had erythrasma. Brumpt[15] cited Michele as stating that it gave a brown coating on gelatin and a wine red color on potato, but Ducrey and Reel as stating that the cultures were white on gelatin, although they were reddish brown on potato.

All things considered, it is not advisable to draw a final conclusion as to the identity of my species. This is largely because the ones previously reported have been insufficiently described and because methods of classification do not permit my going any further than to assign my organism to the group *Breviora* among the nocardias as classified by Brumpt.[9] But it is my belief that in medicine it is a new species found in human beings.

TESTS

Staining of Keratin.—In order to test out whether the brown pigment, which was elaborated by this thread organism and diffused into the medium, had a specific staining power for keratin, the following tests were made. Two forms of keratinous material were prepared; first, sordes from the tongue of a subject on whom a necropsy was performed; and, second, the same, but sterilized in the autoclave to prevent bacteria from modifying the pigment.

These materials were immersed in the aqueous extract of an old, brown, dried-out agar culture of the streptothrix—a pale brown fluid. Controls were kept in a physiologic sodium chloride solution. A definite brown pigmentation of the sordes materials resulted in both cases, but it was more noticeable in that in which the material had been sterilized. In the nonsterilized portions, there was much proliferation of yeast.

Similar tests were made on thin shavings from the horn of a cow and from the finger-nails of human beings, but a comparable discoloration did not result.

Cultures of Tobacco.—Some of the plug tobacco, which the patient had been in the habit of chewing, was cultured in an attempt to recover the thread organism. Although the cultures were kept for several months, the attempt was unsuccessful.

I do not believe that this single examination of an isolated sample of tobacco is representative of the patient's experience with tobacco during so many years. It is still possible that the tobacco was the original source of infection.

Tests on Animals.—A white-fronted cebus was fed with an old sugar-bouillon culture of a streptothrix. It received 6 or 8 drops every day over a period of

15. Brumpt (footnote 9, p. 994).

two months. The beast was in poor condition when the feedings were started and died with a fermentative enteritis and osteomalacia in about three months. It was noticed during the final four or six weeks that the white hair of the face and the venter of the body had turned brown, but the tongue never became definitely discolored. At necropsy, the intestines were found practically empty, containing only a small amount of creamy material, more or less spumous and stained by bile. There were great numbers of a large-celled yeast; sparing numbers of streptothrices were also observable. The tongue appeared quite normal.

Hairs of the Face.—Smaller and larger, but still minute, rust-brown nodules, the largest being not more than 0.2 mm. in diameter, were found closely placed along the course of the white hairs of the face and venter. Not only were the nodules brown, but the intervening portions of the shaft of the hair were faintly stained. None of these were available for photographing; a number of hairs were examined immediately and form the basis for the following brief report, but after the entire head of the animal had been placed in formaldehyde as a permanent museum specimen, the nodules on the hairs softened, disintegrated and entirely disappeared. The following observations were recorded immediately, however, at the time the necropsy was made.

The hairs examined in water under a coverslip were found to be studded with smaller and larger rust-brown nodules which more or less encircled the hairs. On finer analysis, these nodules were found to consist of short streptothrices like those observed on the hairs of the black tongue, and, furthermore, these organisms could be traced for goodly distances along the hair beyond the nodules. In the latter positions they comprised a thin involucrum for the hairs and doubtless explained the diffuse brown pigmentation along the entire extent of the hair, which has already been mentioned.

The most engrossing feature of the hairs was the manner in which the streptothrices invaded the hair. Thus, they were found as though insinuating themselves between the peripheral lamellae, and causing an outflaring of the margins of the cells of the hair cuticle, such as is figured by various authors for lepothrix (Sutton [16]). Furthermore, the general direction of these rodlike organisms was perpendicular to the shaft of the hair, repeating the traits which had previously been encountered in the "hairs" from the tongue of the human subject. The combination of these two circumstances and their close correspondence in both the objects examined—hairs from the tongue of the patient and hairs from the monkey—was almost amazing.

Second Series of Tests on Animals.—In a second test, two monkeys received a culture of the organism of black tongue on their food daily, over a period of three weeks. In these animals, there were not any abnormal results on either the tongue or the hairs.

PATHOLOGY

Black Tongue.—The discussion of black tongue thus centers around two phases: first, the epithelial hyperplasia which is responsible for the development of the hairs, and, second, the pigmentation. Lebar [17] has given the most extensive account in the literature of the pathologic changes.

16. Sutton, R. L.: Diseases of the Skin, ed. 7, St. Louis, C. V. Mosby Company, p. 1103.

17. Lebar: Black Tongue and Keratochromglossites, Ann. de dermat. et syph **6**:450, 1916-1917.

The Hyperplastic Phase.—Those interested in the first phase should refer to the full and thoughtful discussion of the subject by Heidingsfeld.[1] In short, this author recognized true and spurious cases, the true being referable to congenital tendencies toward hyperplasia of the filiform papillae—naevi in the broad sense—whereas the spurious ones were referred to more or less transient local irritants. Other distinctions need not be repeated in this place, as they were sufficiently detailed by Heidingsfeld.

My opinion is that if a congenital vice is necessary for explaining the true cases, it is likewise necessary for explaining the spurious ones, as both the dermatologic changes and the microscopic changes are identical in the two, whatever differences there are being only of degree. Heidingsfeld was singularly fortunate in securing a biopsy. His observations are corroborated by mine; it was gratifying to find that after my material had been studied and described the observations fitted in almost perfectly with the ones published by Heidingsfeld. Thus, in my material, I reported two kinds of cells, one the more vital and compact, which comprised the shaft of the hair; and a second, a more keratinous type, which intervened between the hairs. Heidingsfeld's sections disclosed that the more compact type of cell comprised the more axial parts of the hyperplastic filiform papillae, while the surrounding more keratinous cells were those comprising the upper parts of the lingual mucosa.

There is one phase of Heidingsfeld's conclusions with which I am not quite in agreement, that is, the matter of the superficiality in origin of the hairlike filaments, as shown in his figure 5. In that figure, I do not believe that the section has passed quite through the lowermost portion of the hair, but that, as shown in his figure 3, the hairy disturbance has its beginnings in the deeper portions of the prickle-cell layer—not the superficial.

Catanei,[18] following failures to reproduce the disease experimentally on monkeys' tongues, came to the conclusion that the disease had its beginnings in the ordinary coated tongue, whether referable to gastrointestinal disturbance, general debility or other causes. The hyperplastic papillae thus afforded a shelter for the lodgment of various microorganisms, which contributed peculiarities of color and also aggravated the original irritation. The latter led to yet further hyperplasia of the papillae, even to the semblance of hairiness. I agree with all of this, as far as it goes, but do not believe that the ordinary coated tongue, plus the decreased general resistance, plus the fungi, can alone explain the hairy tongue. All these factors coincide hundreds of times in a

18. Catanei, A.: On the Pathology of the Black Hairy Tongue, Compt. rend. Soc. de biol. **93**:1492, 1925.

given community, and yet black tongue is rare. There must be some additional factor, as that of iron, or that of an individual peculiarity, such as Heidingsfeld [1] indicated.

I believe that there is a congenital predisposition to an excessive growth of filiform papillae in patients with either true or false hairy tongue and that all that is necessary is the appropriate stimulus to start it. In some cases, this stimulus may well be the activities of syphilis, tobacco, mouth washes, etc., such as have been emphasized in the literature. There is no reason either why micro-organisms of the mouth of the appropriate kinds should not also be responsible, and, furthermore, that the micro-organism should always be of one and the same kind. Heidingsfeld recorded a long list, extending from bacilli in filaments through a filiform bacillus, *Cladothrix, Cryptococcus linuae pilosae* and *Nocardia lingualis.* To this Castellani added *Rhizopus niger.* The case will be the strongest for those of the organisms that can be shown to produce pigment, and which also have affinities for keratin, such as was shown in my case.

The Phase of Pigmentation.—The factor of pigmentation has not received attention to the extent that the factor of hyperplasia has. Of course, the inference is natural and clear in the cases of the pigment-producing fungi that have been isolated from the tongue. Heidingsfeld [1] commented and figured on certain intra-epithelial blood cavities, but from his photomicrographs these appear to have been tips of papillae which were not quite transversely sectioned. I doubt very much that this is sufficient to explain the discoloration. Blood pigment was not mentioned in the text nor depicted in the photomicrographs. I regret that the Prussian blue test for iron was not employed by Heidingsfeld to settle this point. Prinz [5] likewise espoused blood pigment among other things, ascribing its origin to positions around the teeth, etc.; this factor certainly was not operative in my case, as the patient did not have any teeth.

The third source of pigment is one which must be considered seriously, that is, as a metabolic or degenerative one in connection with hyperkeratosis. For instance, Laurentier [19] cited a case of black tongue with an associated generalized ichthyosis, in which two of the patches of ichthyosis on the arm were pigmented black. It would be instructive to keep such patches in a macerated condition, by means of wet dressings, over a period of two or three weeks, to perform a biopsy and to compare the histology with that of black tongue. Indeed, it is not a far cry from the aforementioned concept of black tongue, at least, and that of cutaneous horns, which are more or less black. Heidingsfeld's allusion

19. Laurentier, Charles: Ichthyosis and Black Tongue, Ann. de dermat. et syph. **5**:35-36 (Jan.) 1924.

to the genesis of cutaneous horns and analogy to hairy tongue is well taken: that is, in both conditions there is a congenital vice of keratinization, that on the tongue being potential and requiring some additional stimulative feature, and being located in a moist situation. Certainly, some such peculiarity in the patient is necessary to explain the difference between the hyperplastic changes of the tongue, such as occur in leukoplakia on the one hand and in hairy tongue on the other.

Lepothrix and Trichomycosis.—After having had the experience with the trichomycosis in the monkey, it was almost startling to read what Heidingsfeld [1] had to say about lepothrix.

> Leptothrix,[20] which has little or nothing in common with hairy tongue, shows a striking resemblance under the microscope in that the affected hairs are coated with an accumulation of loosely adherent cells and detritus containing myriads of micrococci and other microorganisms. The resemblance under the microscope of hair affected with leptothrix to the filaments of hairy tongue is very striking. An additional point of resemblance is the discoloration which in leptothrix is often yellow-red and in hairy tongue black to brownish-yellow.

After this he goes on to indicate that of course there is little in common in the pathogenesis of the two diseases, the source of the hairs of the tongue being so different from that of genuine hairs.

After the experience reported in my monkey, it appears that there is something in common, at least at times, between the two diseases, but only in respect to the pigmentary phases and other mechanical phases. Of course, in trichomycosis, the factor of hyperplasia such as obtains on the tongue is, as far as is known, entirely absent.

Evidently the streptothrix never accumulates in such masses on the tongue as it does on the hairs.

Lane [21] has carefully compared lepothrix and trichomycosis (listing a complete bibliography), and I agree with him that the condition denominated trichomycosis by Castellani is the same as the lepothrix which has been known as far back as 1864. That is, pigmented nodules on the hairs of the axilla which were the basis of the disease lepothrix, were referable to, among other organisms, fungi of the genus *Nocardia* (seu *Streptothrix, Actinomyces* and *Oospora*). The effect of Castellani's pronouncements would thus be to single out a certain group of cases from the general symptom-complex and to classify them on an etiologic basis. I believe that this is a step in the right direction and marks an advance, and that the designation trichomycosis has a useful place in dermatologic nomenclature.

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20. There is a typographical error in Heidingsfeld's text here.

21. Lane, J. E.: Lepothrix, Including a Brief Discussion of Trichomycosis Axillaris Flava, Rubra et Nigra of Castellani, J. Cutan. Dis. **37**:387 (June) 1919.

According to these ideas, the disease of the monkey, while clinically lepothrix, would, after more careful study, be transferred to trichomycosis.

Trichomycosis was thoroughly reviewed by Castellani [3] in a recent paper. According to him, two organisms are at fault in each case; *Nocardia tenuis* appears to be the exciting factor, whereas pigment-producing micro-organisms (micrococci) are associated ones which are responsible for the particular color—yellow, red or black. In the case of trichomycosis nigra, *Micrococcus nigrescens* would be the particular organism responsible for the black pigment. As regards the case of the monkey, I believe that neither of Castellani's organisms was concerned. Certainly the micrococcus was not present, as there was never the deep black color, such as Castellani's descriptions call for, in either the lesion or the culture.

The main differential point is probably that of the color of the nodules; *Nocardia tenuis* produced yellow nodules, whereas mine produced brown ones. These differences, after all, are not incompatible with the concepts of trichomycosis, in view of the broad scope of this disease. Etymologically, it permits the inclusion of any disease referable to invasion (extrafollicular) of the shafts of hairs by fungi, although Castellani [3] doubtless had only the nocardias in mind.

Relationship of Black Tongue to Erythrasma.—This is mentioned only because the two conditions occurred in the same (my) patient and because a streptothrix is concerned in both diseases. *Microsporon minutissimum* is a misnomer—the organism is a streptothrix. It remains to be seen whether the organism of erythrasma also inhabits the tongue.

SUMMARY AND CONCLUSIONS

A streptothrix isolated from a case of black tongue in a human being produced a brown pigment in culture, and was found heavily encasing many of the "hairs." Although attempts to reproduce the disease by feeding the organism to three monkeys failed, a brown trichomycosis was induced on one of the monkeys.

Reports of causative parasites of black tongue have a consistent trend toward streptothrices. It is felt that the one isolated by me played some part in the symptom-complex, if not by inducing the hyperplasia, at least to the extent of contributing to the pigmentation. The fact that the patient was diabetic lends some weight, because dextrose is notoriously favorable to the growth of fungus.

The streptothrix which inhabited the tongue certainly was able to endure on the hairs of the monkey; it is possible that the mouth is a reservoir for the dissemination of trichomycosis or, less certainly, even of erythrasma. It remains to be shown whether this combination of the involvement of the tongue and the axilla constitutes a clinical entity in medicine in human beings.

It is recommended that "hairs" from future cases of black tongue be tested histologically for iron by the Prussian blue technic, and that the employment of steel instruments in handling the original materials be avoided.

ABSTRACT OF DISCUSSION

DR. JOHN E. LANE, New Haven, Conn.: The suggestion that the same organism may be the cause of black tongue and of some of the varieties of trichomycosis of the axilla is extremely interesting. Trichomycosis of the black variety is the rarest of all, and in this country, as far as I know, the only case that has been seen is the one I described. It may be that it is an organism of this variety which is found in black tongue. The variety Dr. Weidman transplanted in a monkey was the brownish one. Trichomycosis is extremely common, but black tongue is rare. I have seen two cases of black tongue within the last year but did not have an opportunity to make any investigation of them. Dr. Weidman told me that his patient did not have any teeth. The most marked case of black tongue I have seen was in a patient who had had false teeth for many years. This, I think, rules out the edges of the gums as the breeding place of the organisms that cause the disease. Dr. Weidman referred to tobacco, but his search for fungi in that was unavailing. I am certain that tobacco has some subsidiary effect in the continuation of this disorder, for if patients stop smoking, improvement is more rapid. Both patients I saw during the last year were heavy smokers; they remarked on the improvement after smoking had been diminished and on the rapid regrowth when they began smoking to their usual amount again. In regard to iron, the patient who is taking any form of soluble iron and has a coated tongue finds that the tongue assumes an appearance very much like that of black tongue. The question whether there is formation of iron by the fungi is extremely interesting.

DR. WEIDMAN: I regret that I did not have time to elaborate on Dr. Lane's work in trichomycosis; that was instigated by the publications of Castellani on trichomycosis. Lepothrix has been known to the medical profession for many years, but, until the time of Castellani's report, the various streptothrices had not been thought of. All those workers were right; the only thing in common in the clinical entity of those days was that there were nodules on the hair, and that they were pigmented and were caused by some kind of micro-organism. From the etiologic angle, many different things were responsible for lepothrix, but in the cases which Castellani examined particularly, he found the streptothrices and separated them into the group which he called trichomycosis. Lane properly called attention to the fact that this was not a new disease, but a refinement in nomenclature in the etiologic direction.

THE STRUCTURE OF FORDYCE'S DISEASE AS DEMONSTRATED BY WAX RECONSTRUCTION *

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In 1896, Fordyce described both clinically and histologically a disease of the lips and the mucous membrane of the oral cavity which has now become a familiar clinical picture to every dermatologist and is known as Fordyce's disease. One phase of the subject, the pathology, has remained controversial, and, although convincing demonstrations have been made by Margolies and Weidman,[1] subsequent reports [2] indicate that opinions are not yet unanimous, as will be brought out later. This fact, based on histologic reconstruction and description of the lesion, prompted further study and seems to warrant this report. At the same time, some of the work of Margolies and Weidman has been repeated. The following report deals with histologic structure alone.

It is not necessary to repeat here all of the finer details involved in the controversy on the pathology of Fordyce's disease. These appear in the paper of Margolies and Weidman. Briefly stated, there are two views, diametrically opposed. Fordyce's disease has been considered, on the one hand, as a name for abnormally situated but otherwise normal sebaceous glandular structures in the epiderm and corium which communicate freely with the surface by ducts and duct openings. On the other hand, many investigators have not believed that the "disease" involved sebaceous gland structures at all, but arose from degenerate epiderm; while another investigator has modified the first theory by contending that the glands do not communicate with the free surface. There is little doubt now that sebaceous glands occasion the yellow spots of Fordyce's disease; hence the reexamination of the lesions in reference to the outlets of the sebaceous glands.

HISTORIC REVIEW

In 1896, Fordyce [3] first described the histologic structures as characterized by a degeneration in the epidermal cystoplasm, and did not in

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* Submitted by Dr. S. O. Chambers in partial fulfilment of the requirement for the degree of Doctor of Science in Dermatology-Syphilology in the Graduate School of Medicine, University of Pennsylvania.

1. Margolies, A., and Weidman, F. D.: Arch. Dermat. & Syph. **3**:723 (June) 1921.

2. Goeckerman, W. H.: Arch. Dermat. & Syph. **14**:50 (July) 1926.

3. Fordyce, J. A.: J. Cutan. & Genito-Urin. Dis. **14**:4135, 1896.

any way attribute the disease to a disturbance of the sebaceous glands. One year later, however, Montgomery and Hay [4] found typical sebaceous glands in the sections which they studied from two cases; and this, in direct disagreement with the observations of Fordyce, represented the earliest evidence of controversy as to the structural characteristics of Fordyce's disease. In 1898, two years after the original description, Delbanco [5] reported the occurrence of a simple hypertrophy of the mucous glands in this disease. A year later, following a convincing histologic study by Audry,[6] who found sebaceous glands corresponding to each Fordyce lesion as characteristic of the disease, Delbanco [7] reported a second study of the disease and agreed with the description of Audry in every respect. In 1900, Suchannek [8] and Heuss,[9] working independently, again reported the finding of sebaceous glands associated with the Fordyce spots; and, if it had not been for the succeeding reports of White [10] in 1905 and of Fordyce [11] again in 1909, in all probability the discussion would have ended with the reports of Suchannek and Heuss. White, however, agreed completely with the original description of Fordyce and pointed out in his studies that the essential changes occurred in the epiderm and were characterized by acanthosis, edema and parakeratosis. Fordyce, in a discussion of the disease, together with White's report, stirred up the old controversy by stating that it was still a question of dispute whether the yellowish spots on the mucous surfaces were dependent on the presence of sebaceous glands or not. Other investigators, among them being Sutton and Margolies and Weidman, then attempted thorough and complete studies of the disease; in 1914, Sutton [12] reported the abnormal presence of sebaceous glandular elements in the epidermis and corium of the mucous membranes lining the mouth and that this histologic structure was characteristic of the disease. The report by Margolies and Weidman [1] followed in 1921. These workers employed large quantities of material secured at necropsy. They were able to demonstrate that in every case the sebaceous glands occurred in relation to the clinical spots of Fordyce's disease. Wherever the yellowish bodies could not be seen grossly, these writers were unable to discover them microscopically. They found the

4. Montgomery and Hay: Proc. Tenth Annual Session Association American Anatomists **8**:76, 1897.

5. Delbanco, E.: München. med. Wchnschr. **45**:1810, 1898.

6. Audry, C.: Monatsh. f. prakt. Dermat. **29**: 101, 1899.

7. Delbanco, E.: München. med. Wchnschr. **46**:459, 1899.

8. Suchannek, H.: München. med. Wchnschr. **1**:575, 1900.

9. Heuss, E. L.: Monatsh. f. prakt. Dermat. **31**:501, 1900.

10. White, C. J.: J. Cutan. Dis. **23**:97 (March) 1905.

11. Fordyce, J. A.: New York M. J. **89**:467, 1909.

12. Sutton, R. L.: J. M. Research **29**:489, 1814.

glands for the most part to be: fully developed and racemose, consisting of from two to four lobules. The glands communicated by ducts and duct openings directly with the free surface. Structures suggestive of rudimentary hairs in association with glands were not found; this was also noted by most other observers. In 1926, Goeckerman described sebaceous cells immediately beneath the epiderm in his sections from the penis, but did not observe ducts connecting them with the surface. He concluded, with reservations, that these sebaceous cells did not connect with the surface, did not excrete and were probably sebaceous nevi.

TESTS

Pieces of buccal mucosa, about 1 cm. square, showing Fordyce's spots on their surfaces, were obtained at necropsy. Before fixation, they were placed in an alcoholic solution of sudan III in an attempt to demonstrate the small openings made visible by this method as reported by Margolies and Weidman. After immersion in the solution of sudan III for one hour, the tissue was removed, differentiated in 75 per cent alcohol and examined. Before being subjected to the staining with sudan III, the piece of tissue under discussion showed not more than six yellowish spots; but following treatment with sudan III, twice as many faint, pink spots of variable size were visible to the naked eye. This may well mean that Fordyce's disease is present on many (or all) apparently normal lips, but that the spots are so small that one cannot see them until aided by the solution of sudan III. This is a point deserving further inquiry. When examined with a lens, these spots were found to represent small openings with a crater-like rim and surrounded by the submerged yellowish bodies. The small apertures were not always located in the exact center of the Fordyce spots, but were always within its boundaries. Continuing the technic described by Margolies and Weidman, I expressed material (contents of the duct) from these openings and examined it under the microscope; it was found to be composed of fat cells. Next, the piece of tissue was carefully incised; under a lens, a razor blade was guided precisely through the center of the yellowish spot perpendicular to the surface. The cut surface of this tissue was then examined. At the surface and extending to the corium, a faint, pink line could be traced, continuous with the yellowish spot and with the small opening on the free surface. This, in all probability, represented the duct of a sebaceous gland to be described later.

Histologic Examination.—The tissue was then subjected to routine fixation, blocked, sectioned and stained with hematoxylin and eosin. A total of one hundred sections was cut for examination, which measured 6 microns in thickness. Sebaceous glands occurred of various grades of complexity—from simple to compound lobular glands. In all cases, an outlet could be demonstrated on the surface (fig. 1).

Epiderm.—A variable degree of hyperkeratosis was noted throughout, which never bore any constant relation to the glandular structures beneath. There was also a varying degree of edema of the epithelium. Acanthosis represented the most constant feature to be noted histologically and appeared to be proportionate to the development of the sebaceous glands beneath (fig. 2). This moderate acanthosis will be commented on later in the wax model, as it was greatest in association with the larger sebaceous glands.

The Glands.—The sebaceous glands varied as to size and form, few being of the simple type (a mere pouchlike body), and the majority represented the

multilobular or racemose variety and had from three to ten lobules situated in the dermis and upper part of the corium. The glandular structure was in every respect normal, with a secretory portion and duct continuous with it. The lobules emptied into a common gland cavity which contained fat globules, fat crystals and epithelial debris after the normal fashion. A duct containing similar fatty substance and debris continued from it to the free surface, from which I was able to express the fatty substance, as mentioned before. In every respect the glands were of normal structure. Inclusions of rudimentary hairs were not seen in any of the sections examined.

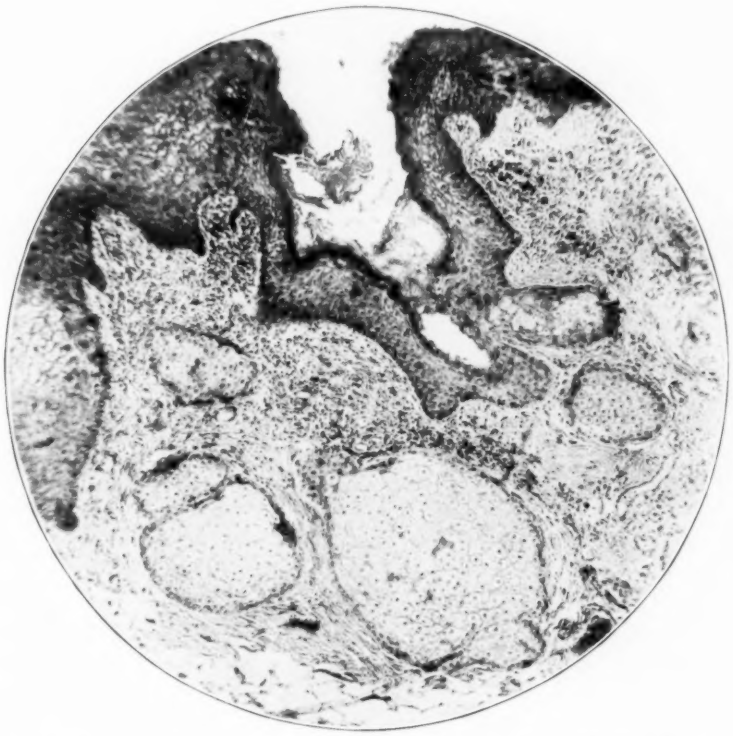

Fig. 1.—Duct and duct opening in direct communication with the free surface.

Reconstruction.—In the series of sections selected for reconstruction purposes, two glands were included throughout their entire extent. The Edinger projection apparatus was employed to throw the image of the section on drawing paper below, on which the various structures necessary for the reconstruction of the lesion were traced. It was necessary to make eighty such tracings in order to include the entire extent of the two glands. The ratio between the actual measurements of the sectioned structures and the tracings was 1:50. The wax plates used were 1 mm. in thickness; hence, one plate was made to every two drawings in order to reproduce the proper proportions of the structures studied. The actual size of the wax model was, when completed, 13 cm. in length (epithelial surface) and 10 cm. in depth (depth of the glands into the corium). During the construction of the model, it was purposely divided at a level which would

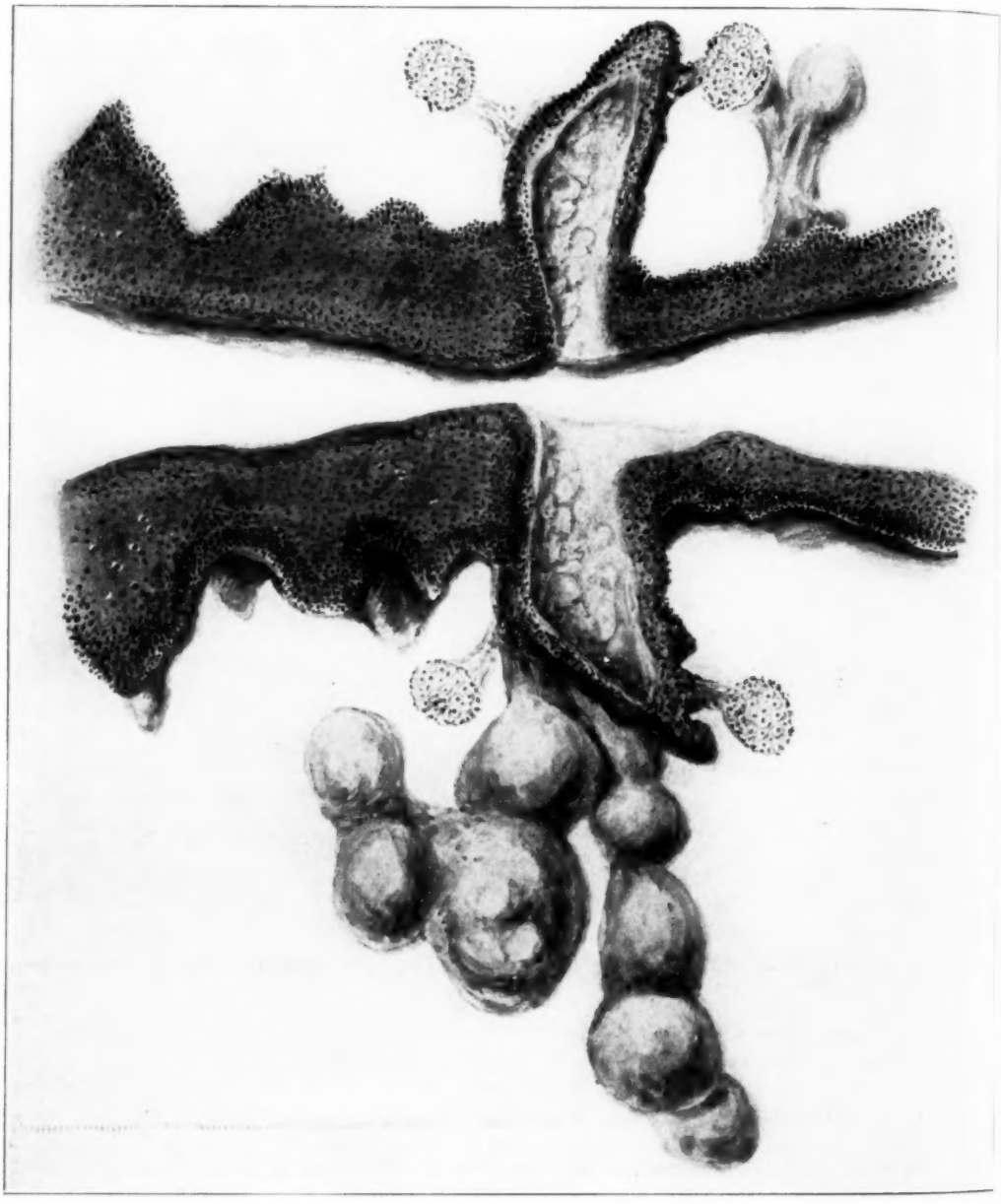

Fig. 2.—Wax model, section at a level to show relations of gland cavity, duct and duct opening to the free surface of the skin.

demonstrate the gland cavity, the duct and the opening on the free surface (fig. 2). The model was selectively painted in order to emphasize and contrast the important features.

Of the two glands included in the reconstruction, one was about three times larger than the other. Both were racemose, the larger showing as many as ten lobules and the smaller but two (fig. 2). The gland in each case definitely communicated with the free surface by a duct. The actuality of the duct opening is clearly demonstrated in the cut surface of the reconstructed model and represented a continuation of the glandular structures below, as checked up directly with the histologic sections. The gland cavity is also visible from this cut surface. The epidermis at one end of the model shows a marked acanthosis and is associated with the beginnings of a third gland, which was not included in its entirety.

COMMENT

As to the etiology of Fordyce's disease in the mouth, the glandular elements should not be dismissed after being so consistently met with by a number of workers and so definitely related to clinical Fordyce's spots. It would seem that they should represent the factor on which the disease should be based; in their presence, epidermal degeneration (a superficial phenomenon) should not supplant such constant and gross elements as the sebaceous glands. The theory offered by Audry, by Sutton and by Margolies and Weidman as to the basic pathogenesis of Fordyce's disease is the most logical. The glands and spots are probably due to the snaring off and invagination of germinal anlages.

It is difficult to pass judgment on the pathologic process in Goeckerman's case, because the part concerned was so different from that in the other cases reported. It may be that the glands in this case did not communicate with the surface, but this is undoubtedly not true for all Fordyce's spots and probably not true for all patients (in my material, all of the spots were supplied with ducts).

Even were these glands disconnected from the surface, the pathogenesis and nomenclature would remain the same, it being possible for the connection between the parent epiderm and its child to be severed as a secondary process. There was neither anaplastic nor other important degradation of the sebaceous cells to support the idea of a nevic basis. The principles concerned remain the same; granting that the fault in such cases is one of embryonal development, to make a distinction between a congenital anomaly and a nevus appears to be forced as long as some of the structures maintain the high grade of development indicated in the reconstruction. To be quite accurate, the hamartoma of Albertson rather than the nevi include these lesions. Not only are these sebaceous glands highly developed, but they are orderly enough to be alined with the congenital anomalies; one might as well regard the well known inclusion dermoids of the somatic midline as nevi.

SUMMARY AND CONCLUSIONS

The subject of the pathogenesis in Fordyce's disease has been reviewed. In furtherance of this, serial sections of buccal lesions were cut and a wax reconstruction made for the purpose of reexamining conditions at the orifices of the glands. The observations were as follows:

1. Sebaceous glands were again found; in tissue stained grossly with a solution of sudan III, a duct could be demonstrated (under the loupe) within the boundaries of each Fordyce spot.

2. Histologic sections and the wax reconstruction demonstrate that glands were in direct communication with the surface by means of ducts.

3. There was a moderate acanthosis over positions occupied by the glands.

4. The distinction may appear forced, but in view of the grade of perfection attained by the glands, as well as from analogy with inclusion dermoids, the lesions of Fordyce's disease should be lifted in classification as high as congenital defects or anomalies rather than nevi.

CARATE (PINTA) AS OBSERVED IN COLOMBIA, SOUTH AMERICA *

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The name pinta (from the Spanish word "pintar," meaning to paint) is used by American authors to designate a group of related or possibly identical diseases seen in various parts of tropical America. The disease appears to have existed among the Aztecs, though some investigators have claimed that it was imported to the new world by African slaves. It is found chiefly in certain parts of Mexico, Central America and some of the South American countries including Venezuela, Peru, Bolivia, Brazil and notably Colombia. Isolated cases are reported from Egypt, Tripoli, The Gold Coast, etc. The disease has many synonyms such as pinta, mal de pinta or tina in Mexico, cute or carare in Venezuela, cativi in Honduras and carate in Colombia.

The disease known as carate is prevalent in certain parts of Colombia; Montoya y Flores [1] estimated that there were 200,000 cases in that republic in 1898. Three years ago, Peña Chavarría and Shipley [2] considered the number of cases to be about 400,000, stating that the majority were found in the neighborhood of the large rivers. According to Urueta,[3] the disease "in its purest form" is gradually disappearing on the Atlantic Coast of Colombia, though there are still many cases to be seen in Santa Marta, where my observations were made.

A general description of carate as given by various authorities is somewhat as follows: The disease is endemic in certain hot, damp and low lying portions of tropical America. It is not hereditary, nor, according to Sandwith,[4] directly contagious. It appears most often between the ages of 15 and 25, is less frequent in children and is rare or unknown in infants. It affects chiefly the dark races, and is extremely rare in the white race. It is essentially a local disease of the skin and does not produce constitutional disturbances. It begins on the uncovered parts of the body, including the hands, feet and face, and not infrequently becomes generalized. Its onset is insidious and its course

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* Read at the Fifty-First Annual Meeting of the American Dermatological Association, Washington, D. C., April 30, May 1-2, 1928.

1. Montoya y Flores, J. B.: Recherches sur les Caratés de Colombie, These de Paris, 1898.

2. Peña Chavarría, A., and Shipley, G. G.: Contribución al estudio de los Carates de America Tropical Rév. Med. **10**:648 (March) 1925; abstr., Arch. f. Schiffs- u. Tropen-Hyg. **29**:605 (Oct.) 1925.

3. Urueta, E.: Pinta or Carate (With Special Reference to Treatment), Proc. Internat. Confer. Health Problems, Trop. America, 1924, p. 524.

4. Sandwith, F. M.: Pinta, Brit. M. J. **11**:1270 (Nov. 11) 1905.

extremely chronic. The characteristic features are pigmentary changes, the lesions in different cases assuming a blue, violet, red, black, yellow or white color, or at times a mixture of two or more. The terminal stage in many cases appears to be a complete depigmentation, though, according to some authors, the patches may be white from the outset. The palms, soles, hair and nails are not affected. In extremely chronic cases, the mucous membranes are involved. Scaling of the pityriasic type is present in the early stages followed by scaling of the lamellar type. Itching is said to be a prominent symptom. The patches are apt to be fairly well defined and asymmetrical in distribution.

PERSONAL OBSERVATIONS

My observations on carate were made in the hospital and on the banana plantations of the United Fruit Company in Santa Marta, Colombia, where I remained as a guest for a week. Every possible convenience was put at my disposal including a well equipped laboratory, photographic dark room, etc. A trip of 50 miles was also made to some of the rural dispensaries where patients with carate were assembled and some of them brought to the hospital for further study. The equipment that I took consisted of 100 culture tubes of Sabouraud's medium and a 5 by 7 camera with a 10 inch focal distance lens. In studying carate, I was left largely to my own resources, as there was no one in the hospital at the time who had made a special study or had an expert knowledge of the disease.

Examination of the patients with carate revealed a type of disease of the skin which I had never seen in the United States. Two years before, in Mexico City, I had seen two extensive cases of blue pinta which were somewhat different from any of the cases of carate in Santa Marta. At first glance, the most striking feature of carate was the complete depigmentation suggesting ordinary vitiligo which many of the patients presented about the wrists and ankles. Closer observation showed that while individual patches were identical with vitiligo, their constant association with pigmented or partially depigmented areas did not leave any doubt that they were not this disease. As a matter of fact there were several patients with dark skin who were suffering from vitiligo which aided in a comparative study of the two conditions. The various changes of color described by different authors were not as striking as I had been led to expect. Patients with either yellow or red carate were not seen, the latter variety being extremely rare and said to occur only in the white race. With the exception of the white (vitiligoid) patches, the only striking abnormality in pigmentation was a bluish color; which, however, was unlike any dermatologic condition with which I am familiar.

Twenty of the cases in which notes were taken showed some shade of slaty-blue, at times suggesting the color of powder grains in the

skin and at times being dark enough to be called bluish black. There were not any cases which, as it seemed to me, could have been called black carate as there was always an associated bluish tint. Whether some of these cases with a bluish tint would have been classed as violet carate by experienced observers of this disease, I do not know. The bluish color was most frequently seen on the face, especially the malar region, nose, chin, lower part of the forehead and ears. It was also present on other parts of the body. The great majority of the bluish areas were entirely smooth and did not show evidence of scratching.

One of the prominent features of carate was a varying degree of depigmentation which was observed on closer inspection. A feature especially striking to a dermatologist was a peculiar, fine, reticulated, mottled or variegated appearance of some of the lesions. This was suggested in a published letter by Wise [5] in recording a brief visit to Santa Marta. These reticulated areas were partly due to partial depig-

Fig. 1 (case 1).—Entire lower extremities showing piebald appearance from contrast of complete depigmentation with normal or deeply pigmented bluish skin.

mentation and partly to bluish or brownish hyperpigmentation. In addition to this fine reticulation, there was the usual mottled or piebald appearance formed by the contrast of vitiligoid patches and normal dark skin.

While I saw fifty patients who were said to be suffering from carate, I was only able to obtain records of some value from twenty-five. Of these, there were twenty who presented some definite bluish pigmentation in addition to other changes in the skin. Of the latter, fifteen were males and five were females. The age varied from 9 to 60, the average being 33 years. All were more or less dark in color, four being apparently full-blooded negroes, the others a mixture of negro, Indian and white blood.

The duration of the disease in seventeen cases, in which this was known, varied from seven to fifty years, the average being fourteen

5. Wise, F.: J. Cutan. Dis. **32**:857 (Dec.) 1914.

years. If the two cases of extremely long duration are omitted, the average duration was lowered to eleven years.

The eruption involved the extremities in every case, both upper and lower being affected, except in two cases. In thirteen cases the eruption appeared on the face and neck as well as on the extremities and the trunk. The forearms and legs, particularly the extensor surfaces, were more often affected than the arms and thighs. In some cases the eruption was generalized and profuse. The front of the wrists, knuckles, back of fingers and malleoli were favorite sites for vitiliginous patches. Some of the areas affected are shown in figures 2, 3, 4, 5 and 6.

The type of eruption varied greatly and formed an unusually variegated picture in some cases, which was difficult to describe. Partial depigmentation of varying degree was noted in thirteen cases and complete depigmentation in eleven cases. The peculiar fine reticulation

Fig. 2.—The entire forearm is affected; the greater extent of flexor surface reticulation is due to varying degrees of depigmentation and puncta of normal or bluish skin; areas of complete depigmentation are seen on the front of the wrists.

described previously was present in nine cases. All showed some bluish discoloration either in diffuse areas or varying sized macules.

The palms and soles showed nothing that could be definitely classed as a manifestation of carate. In four cases, there was some brownish mottling of the palms possibly due to fruit stains. In the adult males (who were laborers) hard, dry callosities were present on both palms and soles. The mucous membranes, hair or nails were not involved in any of the cases. In one case (fig. 7) with extensive complete depigmentation, there was partial canities of the eyelashes, eyebrows and the hair of the scalp and pubes. In this case the general depigmentation involved the genitals. These were not affected, however, in any other case.

Itching, which is described by so many writers, was conspicuous by its absence in most of my patients, from both the objective appearance of the skin and the patient's statement. It is true that a number of patients showed considerable evidence of scratching and traumatism of the legs, but they were men accustomed to doing hard work without

wearing protection for their feet or ankles. In one case there were slight ulcerations. Many of these patients showed hemorrhagic puncta from the bites of sand flies.

Another symptom which is prominently mentioned by most writers is scaling, which is said to be branny at first, later becoming lamellar.

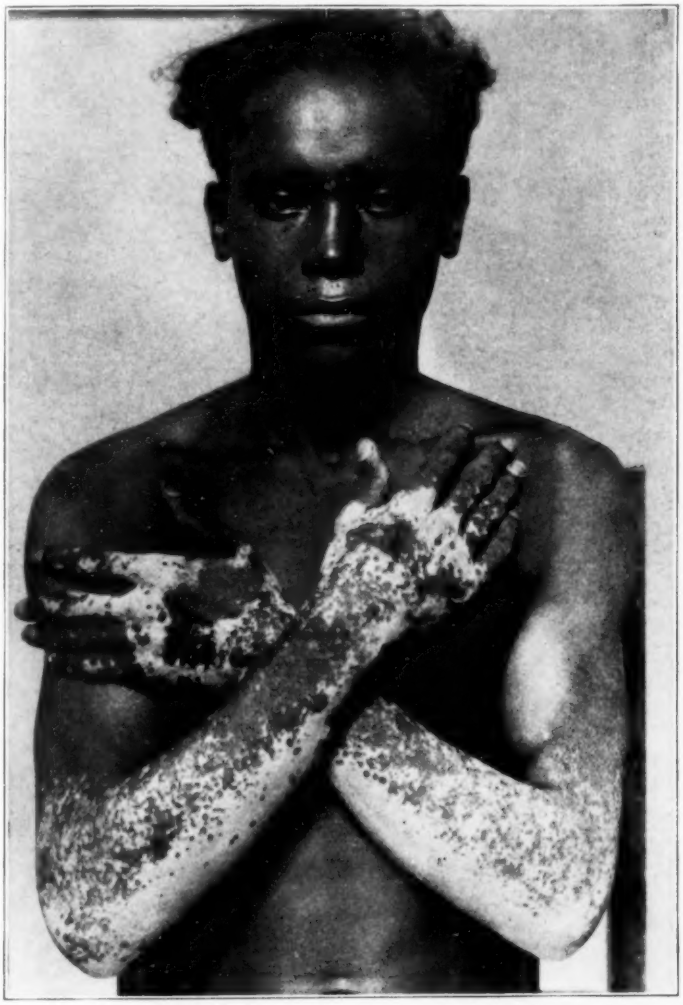

Fig. 3 (case 1).—Negro, aged 22, with dark bluish, diffuse pigmentation of nose, cheeks, forehead, upper lip and ear (not shown in photograph) of ten years' duration. The anterior aspect of the trunk is a diffuse bluish color; the arms show well demarcated areas of partial depigmentation; the back of the forearms and hands show areas of complete depigmentation. There is not any scaling or itching.

It was surprising, therefore, to find that scaling was rather inconspicuous in the majority of my patients. In many of the extensive areas, with or without bluish pigmentation, there was little scaling and it was

frequently difficult to obtain enough scales for microscopic examination and culture except by vigorous scraping. Lamellar scaling of the legs and ankles was noted in seven cases; there was no more, however, than would be expected in laboring men not accustomed to frequent ablutions. In two cases, there was lamellar scaling on areas of the thighs and buttocks respectively which were the sites of bluish pigmentation.

Fig. 4.—A man of mixed Indian and white blood, aged 24, with an extensive eruption of the face, trunk and extremities of seven years' duration. There are blue areas on the nose, cheeks, chin and sides of the neck. The trunk anteriorly shows fairly well defined extensive areas of partial depigmentation, mottled with freckles and larger spots of apparently normal dark color. The arms show reticulated light and dark areas, and completely depigmented patches on the back of the hands and wrists. The culture showed *Aspergillus* from two areas. Direct microscopic examination showed fungus.

MICROSCOPIC EXAMINATION

Direct microscopic examinations were made from thirty separate areas of the body, in the twenty patients showing evidences of blue carate. The areas selected included those which were smooth or scaly and either bluish or in various stages of depigmentation. When scaling

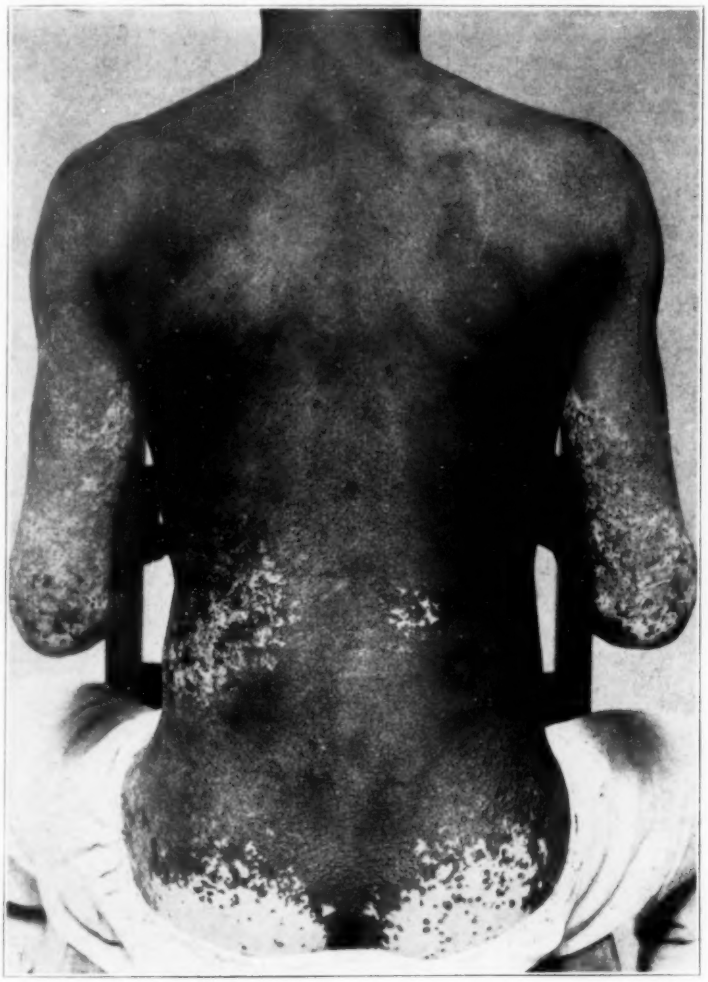

Fig. 5 (case 1).—There is a small area of normal skin in the scapular regions. The middle two thirds of the back show partial depigmentation with small islands of dark skin. The lower back shows diffuse, deep, bluish pigmentation of dorso-lumbar regions; the buttocks and the back of the arms show areas of complete depigmentation.

was not present the affected area was vigorously curetted to the point at times of causing a slight bleeding. The skin was not sterilized before curetting was performed. The scrapings from seven patients were

examined in Santa Marta, but no suggestion of fungus was found. The greater part of the material was brought to New York and examined at leisure during the course of the two succeeding months. The preparations were made with 30 per cent solution of caustic potash, in the majority of cases gentle heat being applied to the slides. These were made and examined by my laboratory technician, Miss Avchen,

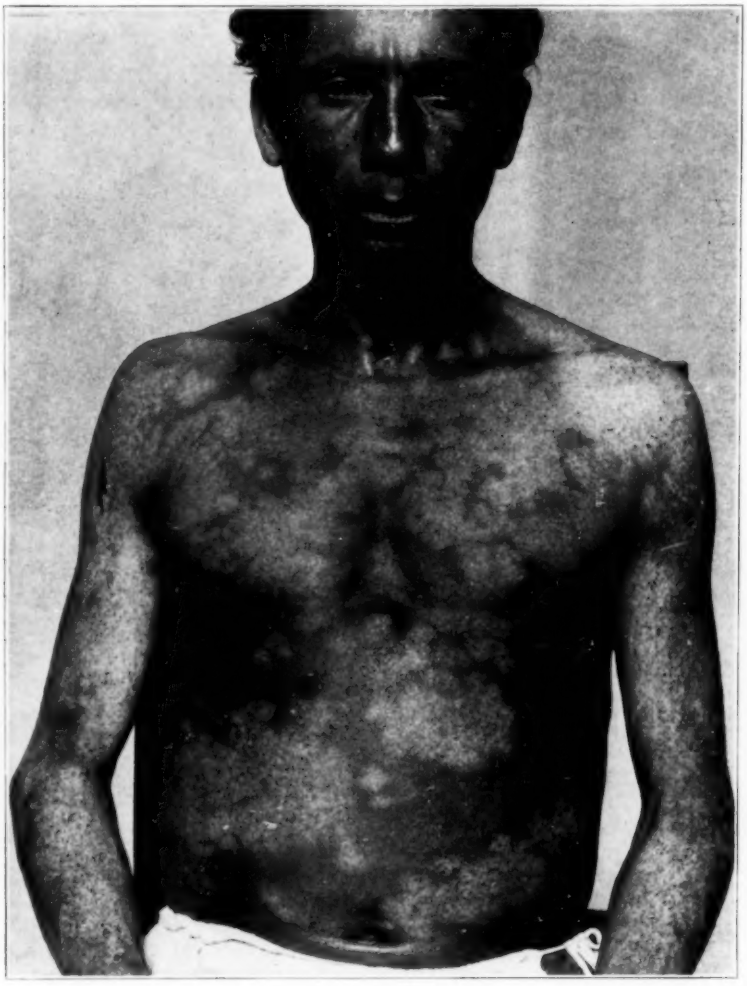

Fig. 6.—A man with mixed Indian and negro blood, aged 35, with a generalized eruption of the face, trunk and extremities of fifteen years' duration. There are areas of slight bluish pigmentation of the nose, cheeks and chin. The trunk anteriorly shows well defined partially depigmented and somewhat reticulated coalescing various sized patches, with a few brownish freckles. There are bluish scaly areas on the thighs and legs. The lower part of the legs are severely traumatized. The back shows a more marked reticulation. There is complete depigmentation on the front of the wrists and the knuckles. Cultures showed *Aspergillus* from two areas, yeast and possible *Trichophyton*.

who also made all of the hanging drop preparations. In spite of conscientious and painstaking search, fungus was found in only one of the many slides examined. In this case, a few septate hyphae were found which consisted of short quadrangular elements. It is true that some of the material was examined as late as two months after it had

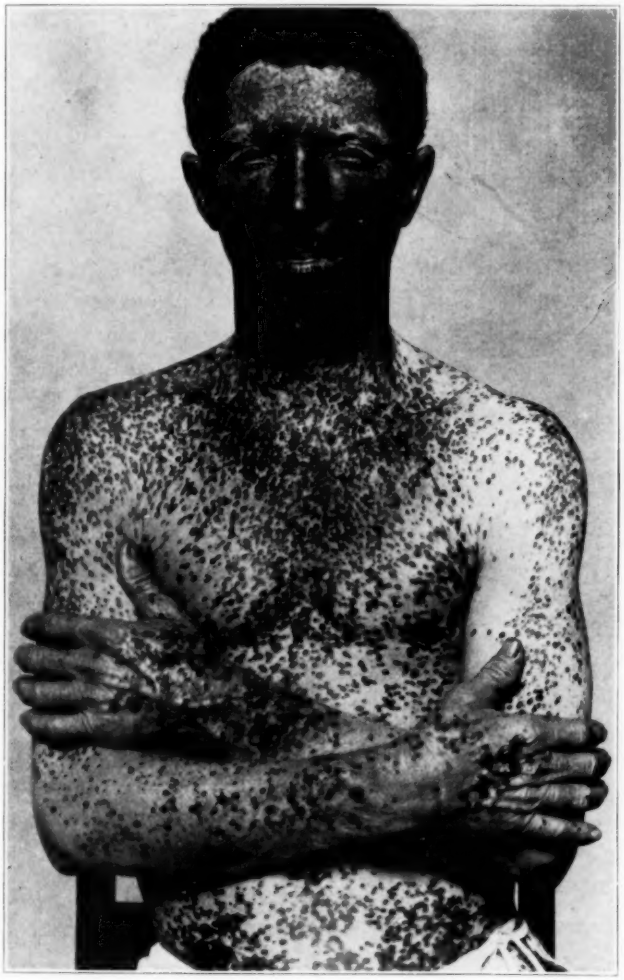

Fig. 7.—A man with mixed negro and Indian blood, aged 36, with an extensive eruption of the face, trunk, neck and extremities of five years' duration. There is a large amount of complete depigmentation with dark spots varying in size from that of a pinhead to that of a coin and giving a strikingly mottled, leopard skin appearance. The face shows bluish black macules varying in size from that of a pea to that of a pinhead and tending to coalesce. The bluish color was seen also on the chest. The rest of the body shows brownish normal skin in small islands contrasting with vitiligoid areas. There is partial canities of eyelashes, eyebrows and pubic hairs. The culture showed *Aspergillus* and *Stemphylium*.

been obtained, which could hardly account for the almost complete absence of fungus, though its viability for culture purposes might have been affected. Some of the slides were examined at once and others after the scales had soaked for twenty hours in the solution of potash.

The almost entirely negative results of direct microscopic examinations were a surprise to me as I had been led to suppose, from the writings of certain authors, that it was a simple matter to find fungus in an ordinary hydroxide preparation. A little later, I was interested to learn that the experience of some other observers was similar to mine. Arjona,[6] in writing on pinta in Yucatan, stated that in this disease he never found any fungus. It should be mentioned that his description of the disease was not very convincing and his six photographic illustrations, while excellent, showed only whitish patches resembling ordinary vitiligo. Folkes [7] stated that in his experience with pinta in Mexico "careful examination with the microscope failed to reveal micro-organisms in scrapings." Castellani,[8] in speaking of the blue variety of pinta, said that in his limited experience with this disease in Honduras, "Fungi are not found microscopically, or only a few spore-like bodies on the surface of the epidermis." Menk,[9] who studied cases of carate at the hospital of the United Fruit Company in Santa Marta, thought that the value of microscopic examinations was limited, for various reasons. The white areas rarely showed fungi and "it usually happens," he stated, "that the apparently diseased area in the skin is free from fungi," though he said that fungus was frequently found in scrapings from normal skin.

CULTURES

Material for cultures was obtained from sixteen of the patients presenting evidences of bluish carate. Scrapings were made from thirty separate areas scattered over the body, including smooth and scaly bluish patches and those showing various degrees of depigmentation. Cultures were also made from the skin of two patients who did not present any evidence of carate or other disease of the skin, and one tube was exposed to the air in the laboratory for two hours. Seventy tubes of Sabouraud's isolation medium (using dextrose in place of maltose) were inoculated. They were kept at room temperature at

6. Arjona, Rodriguez: Beitrag zur Kenntnis des Pinta (Mal del Pinto) auf der Halbinsel Yucatan, Arch. f. Schiff- u. Tropen-Hyg. **31**:472 (Oct.) 1927.

7. Folkes, H. N.: Pinto or Overo, Med. Rec. Mississippi **1**:229 (Sept.) 1897.

8. Castellani, A.: Observations on Some Diseases of Central America, J. Trop. Med. & Hyg. **28**:1 (Jan.) 1925; Arch. Dermat. & Syph. **17**:354 (March) 1928.

9. Menk, W.: Carate in Colombia, Annual Report United Fruit Company, 1926, p. 123.

Santa Marta, at 40 F. on the ship returning home and later grown at room temperature. Hanging drop preparations were made from all cultures that showed fungous growth.

In cultures from two areas, growth was not obtained, while the others showed growths of various fungi and bacteria, alone or in combination. The fungi which were identified as far as possible included both yeasts and molds. Dr. Fred Weidman assisted in this difficult work. Yeast was observed in four cultures. Of the molds, *Aspergillus* was decidedly the most frequent, as it was found in cultures from nine areas. Other molds in the order of frequency were as follows: *Trichophyton* (?), 4; *Macrosporium* (?), 3; *Penicillium*, 2; *Stemphylium*, *Monosporium* and *Madurella* (?), 1 case respectively. *Staphylococcus albus* or *aureus* or both were present in twelve areas and *Bacillus subtilis* in one. In two patients, who were thought by the hospital physicians to be suffering from carate, though bluish pigmentation was not present, cultures showed a combination of yeast and *Aspergillus* in one and *Helminthosporium* (?) in another. Cultures from the skin of two normal persons showed doubtful macrosporium and an unidentified mold. In nearly all of the cases, only one type of fungus was grown from scrapings of a given area, although staphylococci were frequently seen in association. The tube exposed to the air showed a growth which could not be identified.

HISTOLOGIC EXAMINATION

Biopsies were performed in five patients who showed four different types of carate, including diffuse and stippled bluish pigmentation and partial and complete depigmentation. The tissue was excised under local anesthesia, fixed in absolute alcohol and later embedded in paraffin. Sections were stained with hematoxylin and eosin, polychrome methylene blue, Ziehl's solution, Gram's stain and Weigert's elastic tissue stain. The histologic examinations were made by Dr. Walter J. Highman, whose observations were as follows:

CASE 7.—Tissue from a stippled bluish area was examined under high power (fig. 8). The epidermis was not changed in outline or thickness. The stratum corneum was thin and flaky. The rete cells (including the basal layer) were nearly all changed to vacuoles with a central nucleus, suggesting psorosperms. The epidermis showed pigmentation (which was not continuous) both from granules in the lower layers and from a considerable number of fibroblasts. The papillary layer showed slight edema, dilation of the capillaries and infiltration chiefly of the fibroblasts. The subpapillary region showed more marked infiltration in the small perivascular foci. The vessels were slightly dilated; their walls were not thickened. The perivascular infiltration consisted chiefly of fibroblasts, a few round cells and many chromatophores, which also were free in this region. The deeper corium was approximately normal. With Weigert's stain, there was an almost complete disappearance of elastic fibers from the subpapillary plexus upward. The pigment was interrupted in the basal layer, forming a broken line where the chromatophores were seen in the corium.

Case 20.—Tissue from a stippled bluish area was examined. The observations were similar to those of case 7.

Case 1.—Tissue from a diffuse bluish area was stained with hematoxylin and eosin and examined under high power. The epidermis showed some fusing of rete pegs in places, in others thinning to form a narrow band. A flaky hyper-

Fig. 8 (case 7).—Histologic section from stippled bluish area of carate.

keratotic scale was present. The granular layer was interrupted and extremely thin. The rete was filled with vacuolated cells. The pigmentation in basal and adjacent layers was dense. The papillary body contained a sheet of infiltration surrounding widely dilated capillaries with swollen endothelium. The infiltration extended down into the subpapillary plexus and consisted of round cells, fibroblasts and a huge number of chromatophores. Below this level changes of importance were not seen. With Weigert's stain, the elastic fibers were found absent at the level of infiltration, and were approximately normal elsewhere.

Case 3.—Tissue from a partially depigmented area was stained with hematoxylin and eosin. The epidermis was similar to that in case 7. In the infiltrated areas there were hardly any chromatophores, but a diffuse fibroblast deposit around dilated vessels. The collagen was distinctly edematous. The pigmentation of the basal layer was interrupted, being extremely dense at some points and slight or

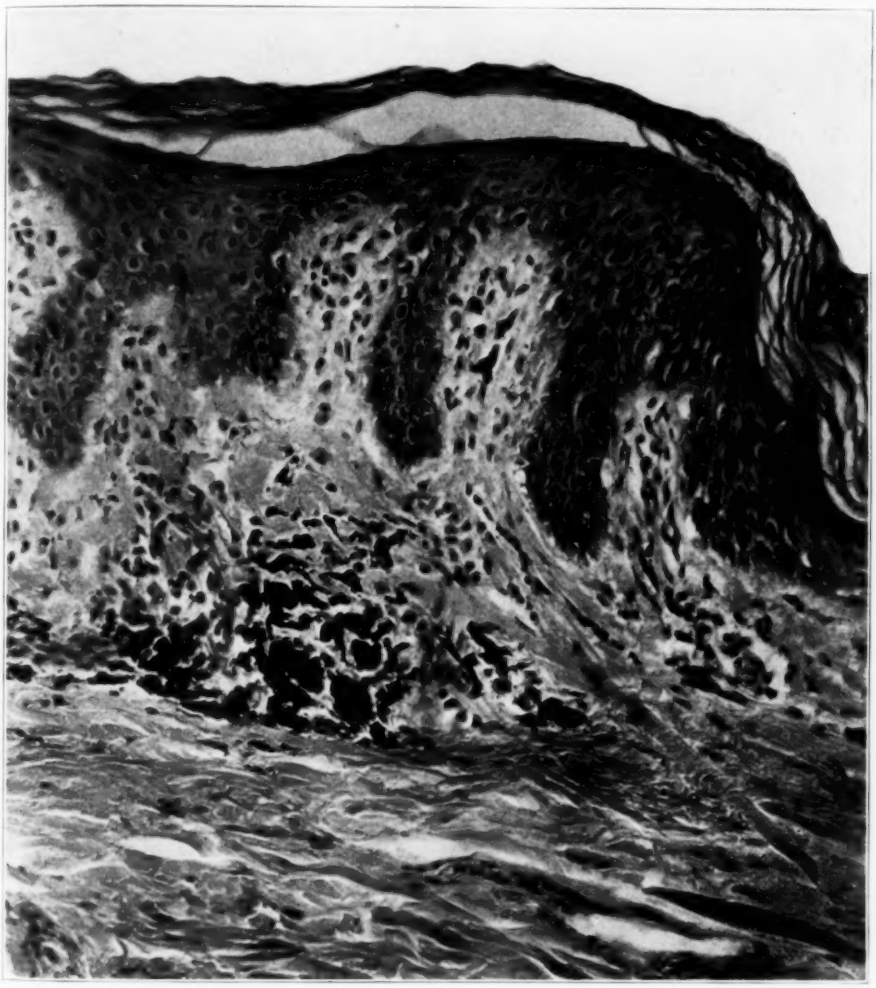

Fig. 9 (case 1).—Histologic section from diffuse bluish area of carate.

absent in others. The usual vacuoles were present. Weigert's stain showed absence of elastic fibers in the papillae and above the subpapillary plexus.

Case 18.—Tissue from a completely depigmented area was stained with hematoxylin and eosin and examined under high power. The epidermis did not show any marked changes in contour. Scaling and the appearance of the rete was similar to case 7. The granular layer was thin but not interrupted. Pigment was not seen in either the epidermis or corium. There was a distinct perivascular infiltration of fibroblasts and round cells without chromatophores. There was a

distinct edema from the subpapillary plexus upward. Weigert's stain showed only a few fragmentary elastic fibers from the level of the subpapillary plexus upward.

Summary.—The common observations in all the sections were vacuoles in the rete, absence of elastic tissue in the papillae and subpapillary region and pigmentary dystrophy. The bluish color depended on the presence of chromatophores as in some nevi. The process was evidently a mild inflammation leading to vacuolization

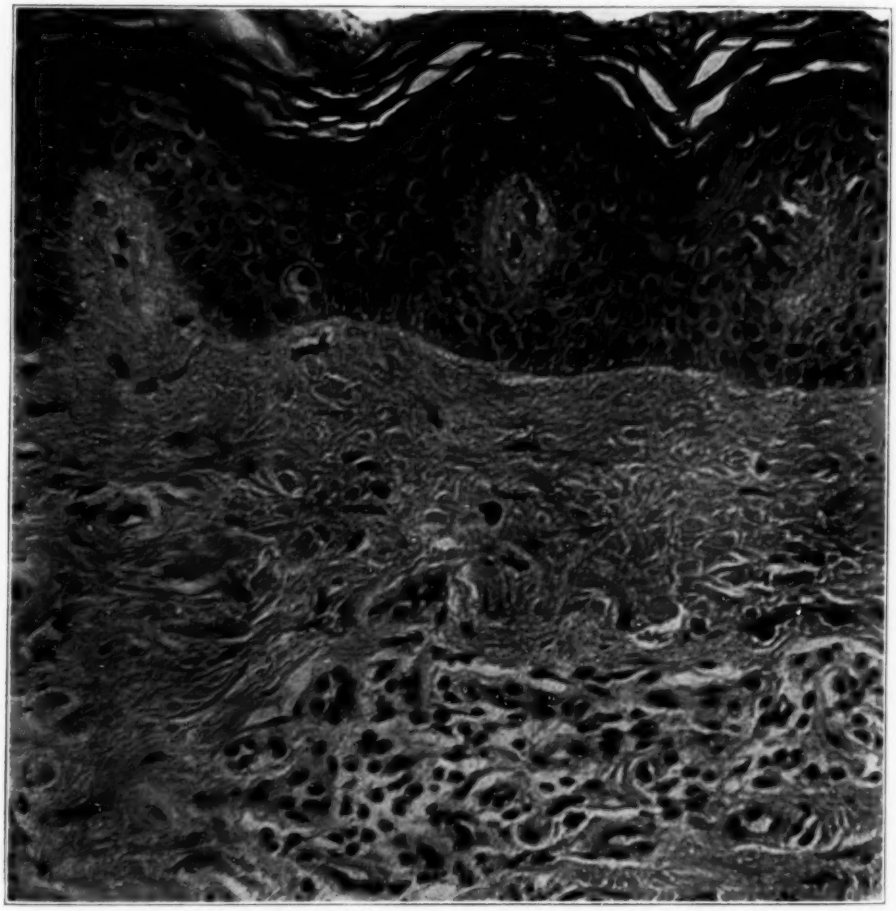

Fig. 10 (case 18).—Histologic section from completely depigmented area of carate.

in the epidermis, slight edema in the papillae and subjacent levels and disturbance of pigmentation and elastic tissue. Sections stained with methylene blue, Ziehl's solution and Gram stain and examined with both high power and oil immersion failed to show the presence of any micro-organisms. The observations were similar to those of Toussaint,[10] as described in an excellent series of articles, with colored illustrations of histologic preparations.

10. Toussaint, M.: Histo-patologia del mal del pinto, Bol. d. Inst. Patol. **6**:443, 1908.

COMMENT

My observations on carate, made in the brief space of one week, are given for what they are worth, and this article can be considered only as a preliminary communication. Furthermore, my work was done without the assistance of any one with expert knowledge concerning the disease. The cases which I have classed as blue carate might have been considered by other investigators as belonging to the violet type of pigmentation.

In view of the positive observations of fungi from scrapings and in sections by Chavarria and Shipley (described in their recent exhaustive report), my results are certainly disappointing, as they were almost entirely negative in this respect. It is true that various fungi, especially *Aspergilli,* were cultivated from my cases, but their mere presence on the skin in natives of the tropics is not conclusive. Castellani says of the "bronzine" and blue type of pinta:

> Cultivation methods may show absence of fungi or presence of penicillium-like, aspergillus-like and other molds identical with those which one finds at times on the skin of normal natives. The etiological rôle of these molds, so many species of which have been described by various observers, seems doubtful and as regards the cases seen by me in Honduras, the organisms were in all probability only saprophytes.

The etiology of carate is a subject which I am not able to adequately discuss. As said previously, it affects chiefly the adults of the dark races who live in certain moist regions of the tropics. Lack of proper hygiene must certainly act as a predisposing cause, while the rôle of insects (especially some species of Simulium) has been frequently debated. Whether the various fungi found in the skin and grown artificially are the causative agents, I do not know. The disease at least does not appear to be extremely contagious as frequently only one or two members of a large family will be affected, while soldiers in barracks do not seem to transmit the disease to others (Sandwith [4]).

Treatment is said to be efficacious at the outset by various parasiticidal remedies. In the later stages, the outlook is unfavorable or hopeless. Chrysarobin in collodion is highly recommended by Urueta.[3] I suggested that this remedy be tried in ointment form, and the part covered by oiled silk or some other impermeable substance.

SUMMARY

Twenty of the fifty patients with carate, observed in Santa Marta, Colombia, showed distinct evidence in some parts of the body of bluish pigmentation. In some cases the color was slaty-blue, in others bluish black. Associated with pigmentation were various stages of depigmentation and a peculiar fine reticulation or mottling. The extremities

were affected in every case. In thirteen cases, the face and neck were involved. In some cases the eruption was generalized and profuse. Itching was conspicuously absent in most cases and scaling was not a prominent feature. The hair, nails, mucous membranes, palms and soles were not affected. Most of the patients were adult males of mixed Indian and negro blood.

Microscopic examinations for fungus were made from scrapings of thirty areas of the body in twenty-five cases of blue carate, including areas which were smooth or scaly, bluish or in various stages of depigmentation. In only one preparation was any fungus present (septate hyphae).

Cultures were made from scrapings of the skin of sixteen patients with blue carate. Seventy tubes of Sabouraud's isolation medium were inoculated and hanging drop preparations made from all. Yeast was grown in four cases. Of the various molds, *Aspergillus* was found most frequently (from nine areas), *Penicillium* and other higher fungi and unidentified *Trichophytons* were grown in a dozen cases.

Microscopic examination was made of five patients who showed diffuse and stippled bluish pigmentation, partial and complete depigmentation. The observations common in all of the sections were vacuolization of the rete cells, absence of elastic fibers in the papillae and subpapillary region and pigmentary dystrophy, the process appearing to be mild inflammation. Micro-organisms were not found in any of the sections.

114 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. MCEWEN, Chicago: I would like to know whether these cases showed any evidence of chronic internal disturbance, possibly of the nervous type.

PROFESSOR BLOCH, Zurich: I think that the paper read by Dr. Fox is extremely interesting, because of the extraordinary changes in pigmentation, which are, so far as I know, unique in this disease. I am sorry he did not bring with him some living patients, or some wax models, because it is extremely difficult to judge the different colors from a simple photograph. For me, one of the most striking features of the pictures is the depigmentation. Clinically, and especially microscopically, it is certainly a sort of vitiligo, but of a special kind, certainly different from the ordinary vitiligo, and may be caused by some microbe or fungus. It would be of the greatest interest to find its true etiology, and I would suggest, if it were possible, to bring some patients to this country to be studied thoroughly.

I do not think that it is a disease caused by *Aspergillus*. In nearly all the diseases in which *Aspergillus* has been found and until now considered the etiologic factor, there has been a mistake. Of course, the great number of patients within a limited area speaks somewhat for an infectious disease, and the whole picture, especially the definite loss of the faculty of the formation of pigment, suggests an endogenous origin, but whether a dermatophyton or any other microbe is the cause can not now be decided. It does not seem probable to me that the changes in the pigment could be produced by any epidermophyton, a fungus which

vegetates only in the most superficial layer of the epidermis. The only thing we can say is that the point of attack must be the basal layer, which is the pigment-forming part of the epidermis. The bluish tint of some of the areas, mentioned by Dr. Fox, can be explained by the microscopic picture. Whenever there are numerous pigmented cells in the higher or deeper layer of the corium beneath an epidermis which is free of, or poor in, pigment, this bluish color is clinically apparent. That is the case both in the Mongolian spot and in the blue nevi. It is a simple physical phenomenon. The histologic pictures demonstrated by Dr. Fox show extremely large groups of pigmented cells in the connective tissue and a depigmented epidermis. All these pigmented cells are typical chromatophores. We can sometimes find similar heapings of chromatophores in the white race. Such a case was described by Dr. Sulzberger in my clinic.

Dr. Highman, New York: When Dr. Fox came back with several suitcases filled with pinta, and with his usual gusto told me of the work to be done, I must confess I did not reflect his enthusiasm. The condition seemed far away, but the material was interesting and I went ahead with it. To my great surprise I found myself deeply interested on looking at the slides. I did not know anything about Toussaint's work when I saw them, and the work that we did at Bellevue was done independently, but it absolutely confirmed his. The explanation Dr. Bloch has given corresponds perfectly with our conclusions. The clumping of the chromatophores was exactly like that described by Toussaint. Bacterial stains of all types failed to reveal parasites. With the Weigert stain, we found changes in the elastic tissue. A striking feature was the vacuolization of numerous cells in the malpighian rete. They suggested the molluscum bodies as seen in molluscum contagiosum.

It seems to me that the condition is a presumable infection, invading primarily the rete, which leads to an atrophy. The atrophy, without my thinking that the condition is at all related to lupus erythematosus, resembled that seen in this disorder, particularly in the vitiliginous areas. I think, with Dr. Bloch, that there is something here which should be carefully investigated.

Dr. Pardo-Castello, Havana, Cuba: I have had a similar experience to that of Dr. Fox concerning the cause of these cases. There are not many cases of pinta in Cuba, but I have seen the discoloration of the extremities, and in those cases there has always been hyperkeratosis. It is difficult to recover the fungus. The skin must be thoroughly cleansed to avoid contamination, and after many attempts I was able to secure a few cultures of these fungi. Years ago, I presented a few cases of what I called achromia parasitaria, in which the depigmentation was not so complete, and in which the fungi were extremely difficult to recover. There are different types of pinta, and Dr. Fox presented only the bluish with depigmentation, but there are reddish, yellow and even black types. I think that these achromia cases reported by Dr. Fox may be secondary to other types of pinta. Kistiakowsky has done a lot of work in achromias in Kiev, and he believes that they are secondary to some other diseases. In my cases, I was able to find the fungus only in the recent infections. I do not think that there is any doubt about pinta being caused by fungi. That has been proved beyond question.

Dr. Wise, New York: Fourteen or fifteen years ago I had occasion to visit Santa Marta, and although I remained only two days, I had a good time and examined thirty or forty cases of this type of eruption. Dr. Fox believes that there has been some change in the symptoms of the disease during the last few years, and I think he is probably right, for I remember seeing in several of the cases a mixture of colors which I compared to those on an artist's palette. They were bluish-gray or greenish, but not true black lesions. The suggestion of

Dr. Pardo-Castello that a hyperkeratosis is connected with this disorder in some instances may be correct, but I did not observe it in the cases I saw.

I think that one of the interesting features of the disease is the geographic distribution. That the cases should be so abundant in Colombia, not appear in the West Indies and then again appear in Mexico is peculiar. One would expect a patient to migrate to the north now and then, but such patients have never been seen in this region. I submit the possibility that the fungus might be found in the early, or incipient cases.

The impression I got fifteen years ago was that it is a fungus disease. Every native that I examined, all of them being banana handlers, had evidences of the disease, so it is natural to suppose that it is contagious and due to a fungus. There were not any constitutional symptoms whatever.

In the *Geographical Magazine* several years ago, a tribe in Australia was described in which the same type of disease was present, but in which vitiligo was more pronounced. I think that it is also probably due to some fungus infection.

Dr. Pusey, Chicago: I think that it is flying in the face of many facts to state that it is a fungus disease, or a contagious disease. Let us consider just one of the types Dr. Fox has presented, the bluish type, followed by depigmentation. Considering only that one type, I do not know any disease which would suggest putting it in the infectious group. I do not know of any disease which produces these things. I think that it has no analogy in any other dermatoses. The fact that this occurs in great numbers of persons does not for a moment prove that it is infectious. If one goes to Atlantic City numerous cases of sunburn will be found but that does not prove that sunburn is contagious. It only proves that these persons have been subjected to the same cause. This type of disorder strikes me as a peculiar anomaly in pigmentation, a leukoderma, followed by depigmentation, rather than a fungus disease. How could that be explained? By heredity, by inbreeding among people with a tendency to leukoderma, by some peculiar climatic conditions in that country which causes its development or by some other undetermined factor.

Dr. Sutton, Kansas City, Mo.: I am greatly interested in this subject because I have spent much time in the tropics. The disorder is found in Mexico and further south, particularly in Colombia. It is strange that it is not found in Cuba or other parts of the world, unless in some parts of Africa. I first came in contact with the condition in 1902, when I was a surgeon in the navy. At that time, I thought there would not be any difficulty in picking up an enormous amount of fungus elements from these cases, but I encountered great difficulty, even in cultures, in getting any fungi. The most striking characteristic of the pictures which I have just seen is that one would think they resemble examples of vitiligo or leukoderma; actually, they do not, in the least. In the human subject, one gets the bluish shade, and the atrophy becomes a fine reticulation. The patients do not suffer from pruritus and internal symptoms are not present. They are always well nourished, and few have systemic diseases. I was interested in Dr. Bloch's suggestion regarding the bluish color being a sort of surface reflection from the deeply-lying pigment granules.

I think that we should feel deeply indebted to Dr. Fox for his investigations and extremely interesting report.

Dr. Fox, New York: In reply to Dr. McEwen's question, I would say that the disease is one which affects the skin alone and very rarely the mucous membranes. It never causes any constitutional symptoms whatever. It does not incapacitate the patient, and is, therefore, not an economic problem. It is probable

that on this account a comparatively small amount of research has been done in this disease.

Professor Bloch's ideas in regard to the contagiousness of carate and its supposed causation by fungi are interesting to me. I feel that the etiology has by no means been definitely settled simply because we are able to cultivate various fungi from the skin.

In answer to Dr. Pardo-Castello, I would say that none of the cases I saw presented any marked hyperkeratoses.

Dr. Wise, who had visited Santa Marta, spoke of polychrome eruptions, including green, red, yellow and other colors. None of the patients I saw presented any abnormal color except bluish and various shades of white. As far as I know, green carate (or pinta) has not been observed.

Dr. Pusey is correct, I think, in considering that the disease cannot be considered to be a communicable one. It does not seem at least to be directly contagious as in large families there will often be only one or two members who suffer from the disease, and among soldiers in barracks it does not seem to spread.

I was glad to hear Dr. Sutton say that there had not been itching in the cases he had observed, which coincides with my own experience.

CRYPTOCOCCOSIS EPIDERMICA *

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Professor-Emeritus of Dermatology in Harvard University
WITH LABORATORY OBSERVATIONS BY
J. H. SWARTZ, M.D.
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BOSTON

For years I was puzzled by the fact that "eczema" of the eyelids should be so utterly rebellious to treatment. In 1924, a girl of 14 came to the skin clinic of the Massachusetts General Hospital with what one was wont to call eczema of the eyelids, but the color of this dermatitis was so strikingly café-au-lait and the surface of the lesion was so suggestive of the type of scaling which one associates with tinea versicolor that Dr. Swartz was asked to scrape the lids and to examine the scales under the microscope. To my gratification Dr. Swartz was able to demonstrate round, budding organisms analogous to yeast.

There the matter rested until the beginning of this year, when in my private patients I found myself frequently encountering skin eruptions in various parts of the body so reminiscent of that of the eyelids of the child treated in 1924 that Dr. Swartz was again called to my aid.

We have been amply rewarded for our curiosity. Dr. Swartz has been so successful in the technic of curettage that he has been able to demonstrate the organism of this disease in no less than thirty-one instances, and the eruption has been so distinctive that he has returned to me only four negative reports.

Our next duty was to search the literature for accounts of similar observations. We thought we had failed in this hunt until we discovered Castellani's article "Cryptococcosis Epidermica"[1] in the February number of the ARCHIVES OF DERMATOLOGY AND SYPHILOGY. These are the words of Castellani:

> While in Ceylon, I noticed on the skin of one of my bungalow servants several brownish, dirty looking patches, which looked much like dirt. He told me, however, that they did not disappear when soap and water were used. I made a scraping and saw that these patches consisted of a large number of budding cells, which I believed to be a saccharomyces. I found the same patches not only in

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* Read before the Fifty-First Annual Meeting of the American Dermatological Association, Washington, D. C., May 1, 1928.

1. Castellani, Aldo: Fungi and Fungous Diseases, Arch. Dermat. & Syph. **17**:205 (Feb.) 1928.

other natives but also in Europeans, especially on the chest and arms, and called the condition "saccharomycosis epidermica," which term I changed later into "cryptococcosis epidermica." I did not succeed in growing the fungus. Chalmers and others have confirmed my observations in the Sudan and in North Africa, but the organism has not yet been cultivated.

F. D. Weidman [2] said: "Yeasts are being urged more and more as a cause of dermatophytosis; it remains to be seen whether they are all that they are represented to be."

A quotation from Dr. Cleveland White [3] is interesting in connection with the discussion of this type of infection:

> I was able to culture yeast fungi of *Cryptococcus* morphology from sixteen patients having a generally similar eruption, conforming to the clinical syndrome usually termed eczema, characterized in its course in one stage by thick and adherent crusts on an erythematous base. Clinically the distribution of the eruption resembles that of seborrheic dermatitis in adults and infantile eczema in the younger patients. Five attempted auto-inoculation tests produced positive lesions in the respective hosts. . . . Results of this study suggest that certain blastomycetes or yeast, cryptococcic in form, may be pathogenic, producing widespread superficial infections usually designated as eczema; it is believed that some types of infantile eczema also fall into this group.

Dr. Swartz and I, therefore, are not the first in the field.

I will now summarize my clinical observations in twenty-three patients studied in the last three or four months. More than these twenty-three cases have been observed, but these will suffice to give one an idea of the disease as it occurs in Boston.

REPORT OF CASES

Case 1.—M. B., a man, aged 31, a leather merchant, had an eruption which had appeared in 1926 while he was traveling in the east; he noticed that heat always increased the degree of inflammation. He was treated by autohemotherapy, and arsenical injections were begun by an American physician in Paris and followed by much internal medication administered by one of the best known Parisian dermatologists. Both these physicians regarded the eruption as autotoxic in nature.

When first seen by me the eruption was present principally on the flexor surfaces of the forearms and appeared as rather sharply bounded, light red, slightly elevated areas covered with a fine, dusty scaling. In the bend of the right elbow there were a few small areas exhibiting the telltale café-au-lait tint. Cryptococci were found in abundance.

Case 2.—M. B., aged 20, a woman student, had a disease of three months' duration. She had noticed the first eruption on the backs of the hands. The lesions were treated by inunction with several different ointments. My first examination revealed several solid, red, elevated, finely scaling plaques with sharp,

2. Weidman, F. D.: Dermatophytosis: Newer Ringworm, J. A. M. A. **90**:501 (Feb. 18) 1928.

3. White, Cleveland: New York State J. Med. **27**:1116 (Oct. 15) 1927.

abrupt peripheries on the backs of the hands; under magnification these showed fine papulation. The bends of the elbows, which the patient had never examined, displayed the typical, untreated and unspoiled, delicate, café-au-lait maculation.

Cryptococci were not found in scrapings from the manual lesions, but the typical budding organisms were noted in abundance in the scales from the elbows.

CASE 3.—H. C., aged 24, a groceryman, had an eruption which began three months before examination in the form of a "pimple" at the dorsal flexure of the wrist; it had subsequently expanded into a somewhat centrally depressed oval 2½ inches (6.72 cm.) in long diameter. Six weeks later, three other lesions developed on the back of the left hand and continued to grow. Within two weeks, a third focus was disclosed at the collar line on the right side of the neck. All these lesions were delicate, fairly well defined macules covered with a fine layer of adherent scales. Microscopic examination revealed the cryptococcus.

CASE 4.—Mrs. A. B. C., aged 29, presented a condition which started in October, 1925, as little water blisters on the fingers; it had subsided under exposure to the x-ray. Later, an eruption was observed on the wrists and in June, 1926, in the bends of the elbows. X-ray irradiation again seemed to effect a cure. Two weeks before my first examination, the eruption had broken out on the neck, and eleven days later, on the thighs. I found the whole neck from the ears to the clavicles solidly and markedly dull red, dry, stiff and covered with adherent dirty scales; all parts of each of the fingers were rather red and swollen and covered with adherent scales, and the adjacent parts of the backs of the hands were somewhat similarly affected; the bends of the elbows, and considerable areas above and below, were dull red and infiltrated; the upper parts of the inner sides of the thighs were delicately red. Cryptococci were found under the microscope.

CASE 5.—L. H. E., a woman, aged 45, a stenographer, who had been treated with a drying wash one week before I saw her, presented at her first visit several dry, red, finely scaling macules, with irregular peripheries on the cheek in front of the right ear. At the same time, pink-red, delicately scaling areas were found on the upper part of the inner sides of the thighs and on the labia majora—lesions which had been present for many years. The lesions on the face proved to be cryptococcic in origin.

CASE 6.—F. J. F., a boy, aged 8, gave the history of a disease which first appeared on the neck in July, 1925, and disappeared and returned in the following April. Infection of the eyelids was recent and when first seen by me in 1926 the upper lids were dusky and furfuraceous, the lower lids were edematous and the front of the neck showed a sharply bounded horizontal band of café-au-lait-colored fine desquamation. These lesions were treated as eczema by me at intervals up to December, 1927, and, of course, ineffectually.

On Dec. 27, 1927, the eyelids were still dusky, and a horizontal fissure had developed on one upper lid; in front of the right ear there were two small, delicately café-au-lait macules the size of a pea. The latter lesions, in addition to my newly acquired knowledge, finally revealed to me the true condition, and microscopic examination disclosed the etiologic cryptococci.

CASE 7.—Mrs. E. G., aged 23, had an infection which first appeared in the bend of the elbows two years previously, but when she was first seen by me these areas were seemingly well. Up and down the length of the inner part of the thigh, however, in the right popliteal space and up and down the inner parts of the forearms were red, rather glistening, somewhat lichenified, irregularly shaped, not sharply bounded macules with much excoriation. On the upper and inner part of the right arm appeared what I have learned to call the primary lesion—that is several

delicate, small macules, the size of a pea, which were minutely furfuraceous, café-au-lait in color and not well defined peripherally. Cryptococci were microscopically abundant in the scales.

CASE 8.—D. G., a boy, aged 2 years and 8 months, was presented because of an eruption of two weeks' duration; the condition had not been treated. In the bends of the elbows, the small of the back, the buttocks, the upper part of the chest, the upper part of the thighs and the penis were small red macules tending toward moisture. The bends of the elbows were markedly excoriated and showed definite infiltration, and the process faded out gradually above and below the actual flexure. Cryptococci were found in abundance.

CASE 9.—A woman, aged 19, a student, presented a type of eruption which I have seen from time to time through years of medical practice—a seemingly incurable type which challenges the nervous and physical endurance of its victims to the uttermost limits.

The disease began when the patient was 1 year of age, and when she was first seen by me in 1917 it had been present for seven years; the condition always became worse in summer. The child would be awakened every half hour every night by the tormenting itch. The eruption was more or less generalized but was especially pronounced about the base of the neck, at the axillary folds and in the bends of the elbows and knees. The affected areas were dull red, infiltrated and badly torn from scratching. Of course the disease was called eczema and treated accordingly. In 1919, the child was seen again and sent at once to the skin ward of the hospital. In November, 1927, the patient came once more with the report that the disease had persisted without cessation, that asthma and indigestion had come to complicate the problem and that the itching was so severe that she walked the floor at night and tore her hair. At this visit the hollows of the elbows and knees were thick, tough, leathery, dull red, adherently and finely scaly and excoriated. The face, hands and chest were red, infiltrated and covered with fine adherent scales. Scrapings were made and in these scales were found microscopically abundant cryptococci.

I have dwelt at length on this case because it represents the possible ultimate tragic fate of such patients when the condition is ignorantly diagnosed and improperly treated.

CASE 10.—Mrs. C. P. H., aged 50, gave the history of a condition which had existed for one year as a delicately infiltrated, pink, finely and adherently scaling macule on the cheek near the mouth. Recently, delicate, café-au-lait colored macules, the size of a pea, had developed near the angle of the jaw and on the backs of the hands. Scrapings were positive for cryptococci.

CASE 11.—Miss E. A. K., aged 39, a saleswoman, complained of a condition which was first seen in August, 1927, at the flexure of right wrist, but, as she said, "it might have begun in the bend of the elbow." The woman was fat and weighed 240 pounds (108.8 Kg.). She wore woolen dresses which touched the naked arms, shoulders and neck, and these dresses were never cleaned or washed.

At her first visit, there was a red, tough, lichenified oval lesion 2 by 3 inches (5.08 by 7.62 cm.) in diameter. The greatest width of the pathologic process was at the bends of the elbows, where the eruption had spread half way around the arms, downward for 4 inches (10.16 cm.) and upward to the axillae and to the sides of the neck. This condition became less red, infiltrated and leathery the farther it progressed from the elbows, and as the axillae and shoulders were approached the outlines became mildly polycyclic. Scaling was negligible. Itching was severe. Cryptococci were present microscopically.

Case 12.—Mrs. G. E. L., aged 56, presented a condition which began six weeks before her first visit. Itching developed on the outer part of the thighs and below the knees; the patient scratched the regions. On inspection, a faint suggestion of irregular, red, café-au-lait elevations with delicate scaling were seen in the bends of the elbows. The arms and legs, both in front and in back, were covered with innumerable excoriations, the size of a pea, which suggested prurigo mitis, although typical infiltration was absent. Cryptococci were demonstrable.

Case 13.—Miss J. E. M., an orthopedic nurse, aged 29, presented an especially instructive example of the disease. Four weeks before she was examined the "mother spot" had developed on the upper part of the left side of the chest; this area had been scrubbed with a stiff brush in the daily bath and had also been burned to the first degree with an Alpine lamp. When first seen by me, the area was a sharply bounded, brown-red, quasi-oval 3 by 2.5 cm. in diameter, without visible scales or elevated periphery. A few days previously three "daughter" areas had appeared. These were irregular, light red ovals, roughly the size of a pea, with exfoliative peripheries loose from the inside—a condition which one considers pathognomonic of pityriasis rosea. It must be remembered, however, that the skin had been burned by a lamp. Reluctantly, I called this disease pityriasis rosea—so reluctantly that I made cutaneous scrapings for microscopic study. Dr. Swartz found crytococci.

Six days later, physical examination revealed four more "daughter" foci scattered about the trunk and thighs. It should be remembered that the patient had been wont to scrub the body with a brush in her daily bath. These new lesions, the youngest I had ever observed in this disease, were pink-red, delicate macules of no particular shape, 4 to 5 mm. in diameter, without clearcut margins and without macroscopic scales—primary lesions, nondescript, resembling the earliest cutaneous stages of many dermatoses and positively requiring the microscope for their elucidation.

Case 15.—Miss S. N., aged 14, a student, gave the history of a condition which began when she was 7 years of age. The patient had consulted several doctors, one of whom discovered positive cutaneous reaction to the scales of several animals. For several years she had visited the Children's Hospital, where crude coal-tar ointments gave the greatest relief of any remedies tried, but they did not cure the disease. The mother stated that the disease first evinced itself in the bends of the elbows.

When first seen by me, the eruption was most marked on the eyelids and over the adjacent part of the face, at the axillary folds and in the armpits, and up and down the arms; it faded out above and below as it receded from the bends of the elbows. All these areas were red and infiltrated. On the upper parts of the inner sides of the thighs there were brownish infiltrations gradually fading out into healthier skin below. Cryptococci were found.

Case 16.—Mrs. F. H. P., aged 30, had been treated by several doctors for an intermittent process of two years' duration. The eruption was first noted in the axillae, then on the eyelids and the chest and lastly in the flexure of the elbows.

At my first examination the only real infiltrations were in, above and below the bends of the elbows; the skin in these regions was dull red, thick, leathery and partly excoriated, and it showed an occasional fine, adherent scale. The areas on the eyelids and cheeks and on the upper part of the chest were poorly outlined, dull red, excoriated maculations. The patient was in a highly nervous state from lack of sleep due to the intolerable itching. She said "she couldn't stand water" on the affected skin. Cryptococci were demonstrated.

CASE 17.—Mrs. S. T. P., aged 29, gave a history of a condition which had begun in the bends of the elbows ten years before and had continued intermittently ever since. When first examined by me—one of many physicians to have treated the patient—the skin of these flexures and a considerable portion of the area above and below was dusky red and visibly scaling. Beyond these solid areas there were small roundish macules, the size of a dime, which varied in color from café-au-lait to red, and segmented superficially by the lines of cleavage. Scales from these areas showed crytococci.

CASE 18.—Miss L. M. P., aged 18, a student, was presented because of a disease which first became visible in September, 1927. The eruption had been treated by a dermatologist in Chicago. First inspection revealed a process limited to the upper part of the inner sides of the arms and the anterior aspects of the thighs. On the arms were several, not round, not really square, café-au-lait, wrinkled macules, none larger than a dime. The lesions on the thighs were large, and varied in diameter from 2 to 3 cm. They were dark red, free from scales (areas had been treated) and suggested, at first glance, the macules of erythrodermie pityriasique en plaques dissemminées. The girl wore a woolen dress, with only trunks and a brassière, thus giving the wool full play over large areas of the naked skin. Cryptococci in abundance were seen microscopically.

CASE 19.—Mrs. W. H. D., aged 40, said that her hands always became chapped in cold weather and that she had experienced the discomfort that year in November. Boric ointment and an ointment had failed to relieve the condition. At the patient's first visit, the backs of the hands showed solid areas of seemingly fused, flat-topped, roundish, maculopapules of a distinctly buff color and the size of a pea. Cryptococci were present.

CASE 20.—Mrs. T. S., aged 67, presented a condition of one year's duration. The eruption was polymorphous, dull red and infiltrated, and eczematoid about the neck, chest and shoulders, and furunculoid on the lower part of the legs. The bends of the elbows appeared to be the primary focus and were deeply infiltrated and blue-red. Above and below these flexures, the process gradually faded out. About the axillary folds, the edges of the lesions were mildly serpiginous. At the base of the neck, lichenification was noted. Examination of the scales revealed cryptococci.

CASE 21.—Miss L. E. V., aged 19, complained of a condition which had been present since she was 2 years of age. She had had "everything" in the way of treatment. The eruption had been observed in the popliteal spaces, but was not noted when she was first seen by me. The bends of the elbows presented brown infiltration, with just a suspicion of minute, adherent scales. Up and down the flexor surfaces of the lower and upper parts of the arms there were ill defined, slightly thickened red macules. The upper eyelids and the nasolabial folds were distinctly infiltrated and unquestionably café-au-lait in color. Similar areas were observed on the upper parts of the inner sides of the thighs. Such a color on this part of the thighs was noteworthy. Cryptococci were present.

CASE 22.—Mrs. A. H. W., aged 71, had an infection of three months' duration, which had become worse in the last few weeks. The process began on the lower part of the back after she wore rubber corsets. When the condition was first studied it seemed to radiate from the axillae outward and downward over the pectoral and scapular regions in great, flat, homogeneous, red areas with sharp serpiginous outlines, raised and dotted with small papules which were topped with scales or crusts. The bends of the elbows showed dull red, tough-feeling

infiltration tapering off gradually into nothing above and below the elbows. On the abdomen and the legs and thighs were large rounded areas, which were delicately scaling and suggestive of the premycotic stage of granuloma fungoides. Cryptococci were found.

Case 23.—J. A. W., a boy, aged 21 months, was presented because of a condition which had been present in the bend of the left knee for one year. The eruption had been observed in the right popliteal space and had disappeared, but it had returned three weeks before my first examination. The patient had been treated by crude coal-tar ointment, which had naturally darkened the color of the eruption. The popliteal spaces were red and infiltrated, while on the abdomen there was a fine morbilliform maculation following a digestive disorder three weeks previously. It was questioned whether this toxic erythema was from the intestines or from the cryptococcic skin. Cryptococci were demonstrated.

Fig. 1.—Eruption appearing in the bend of the elbow.

SUMMARY OF CLINICAL OBSERVATIONS

Sex: Male 5; female 18.

Age of Patient When Disease Began: 9 months, 1 year, 2½ years, and 5, 7, 9, 17, 18, 19, 20, 21, 24, 26, 28, 29, 33, 39, 40, 49, 56, 60, 66 and 71 years.

Duration of Disease: 2 weeks, 1 month, 6 weeks, 3 months (3), 6 months, 1 year (3), 2 years (4), 7 years (2), 10 years, 17 years and "many years."

Seat of Disease: eyelids (4), cheek (4), neck (7), chest (6), axillary folds (5), axillae (2), back (3), arms (6), bends of elbows (15), wrist (3), backs of hands (5), abdomen (3), penis (1), labia majora (1), thighs (9), popliteal spaces (4), and lower legs (2).

Type of Lesion: macules (13), plâques (2), papules (2), adherent scales (14), infiltration (12), lichenification (4), excoriation (5), fissure (1) and edema (1).

It will thus be seen that: the disease affects the female sex largely; it may appear at all ages of life; it may last, untreated or ignorantly treated, for many years; it can affect most parts of the body, but seems to ignore the scalp, palms and soles; the bends of the elbows are the real seats of predilection; the condition is polymorphous, chiefly macular and infiltrative, but never serous or pustular, and it probably is primarily café-au-lait in color, if treatment is not instituted.

ETIOLOGY

Castellani and others in the eastern hemisphere and now Cleveland White and Swartz in the western half of the world have proved that

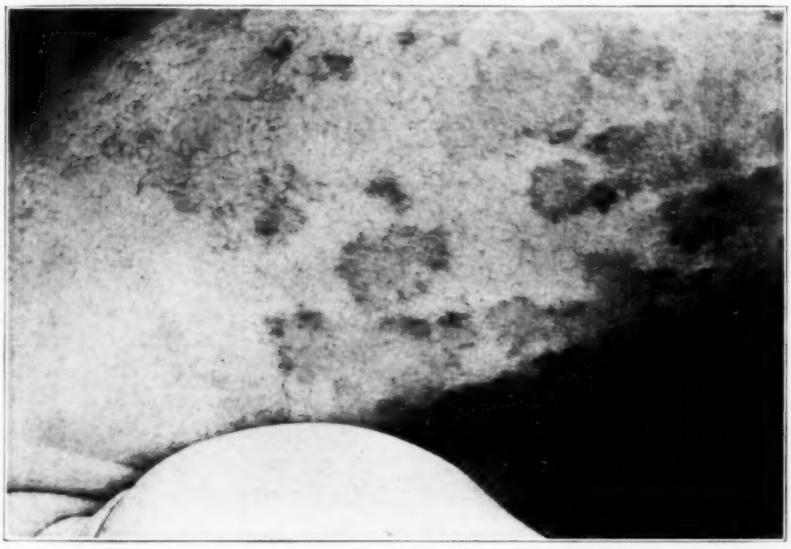

Fig. 2.—Eruption on the outer part of the thigh.

this disease is due to a cryptococcus. Castellani states that the term cryptococcus signifies a yeastlike organism which does not show mycelium in cultures, but appears as a round, budding body, morphologically similar to its appearance in the horny layer of the human skin. This is the organism which Dr. Swartz has found in all the patients whose clinical histories have been detailed in this paper.

LABORATORY OBSERVATIONS

The scrapings most apt to give positive results are those taken from the earliest lesions that have not been treated. These lesions usually are light brown to red and are covered with a fine adherent scale. Superficial scrapings will ordinarily give negative results. By using a small dermal curet and curetting until some oozing of serum

is visible, more satisfactory results may be obtained. The scales thus procured should be treated with ether and sodium hydroxide or potassium hydroxide (40 per cent), and heated to hasten the clearing.

Microscopic examination will show the presence of numerous small spores about 2 microns in diameter, together with budding and nonbudding yeastlike cells, about two to three times the size of the small spores. A few strands of mycelium may also be found. In order that these structures may be seen clearly, a thin preparation is essential.

The organisms are difficult to grow. This may be readily concluded from the fact that growth has been obtained on Sabouraud's mediums

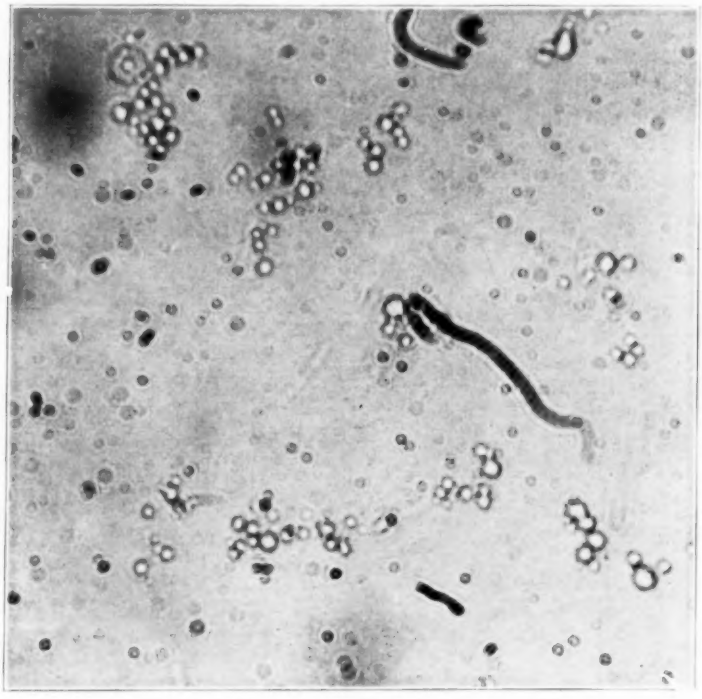

Fig. 3.—A scraping of the skin under the microscope.

in only four cases. The first sign of growth is noticeable at about the end of the second week after inoculation. The growth is scanty and is obtained at room temperature. The cultural characteristics are shown in figures 5 and 6.

Microscopic examination of a smear from this growth reveals the presence of a large number of small budding and nonbudding spores, about 2 microns in diameter. These organisms show a tendency toward grouping, largely in combinations of twos and fours. Only a few large spores are apparent. Closer examination shows the presence of a halo resembling a capsule surrounding some of the individual spores and

some of their groups. Mycelial hyphae are not seen. In a few instances, however, I have obtained a more abundant white growth which on microscopic examination showed the presence of large spores resembling those seen in the original scrapings, but which rapidly become pleomorphic.

With the assistance of Dr. C. W. Dodge, curator of the Cryptogamic Herbarium of Harvard University, we have concluded that this organism may be classed as a cryptococcus.

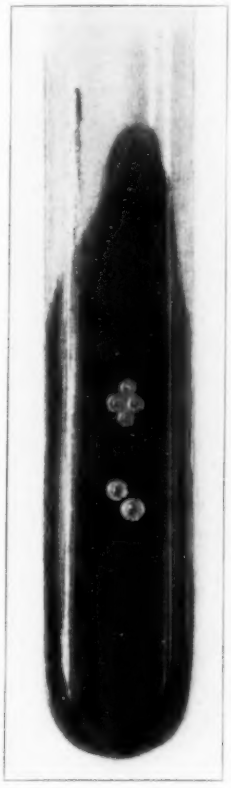

Fig. 4.—Culture on Sabouraud's medium.

Time has not permitted more detailed and more thorough laboratory tests to aid in a more specific identification. It is proposed to submit, at a later date, reports on further laboratory investigations.

We have not tried to carry out all of Koch's etiologic postulates in this work because having become painfully aware of the great difficulty usually encountered in attempting to obtain cure in this disease we have properly hesitated to light a fire which we might not be able to extinguish.

Skeptics, therefore, will raise two objections to our claims that the disease under consideration is produced by the organism cryptococcus.

The first will ask whether these organisms cannot be found on many persons, irrespective of what dermatosis is present. This doubt is answered by Karrenberg,[4] a recognized mycologic authority of Hamburg, who said: "Some observers still disclaim the causative character of the fungi found in the diseases and regard them as saprophytes. During my researches on the mycology of the human skin, I have failed to cultivate an epidermophyton from the healthy glabrous skin or hairy skin, as well as from cases of eczema, psoriasis and other dermatoses."

The second skeptic will say "granting this organism plays a rôle in the etiology of this disease, how does one know that the rôle is the principal one?" Our answer is that in the clinical sister entity ring-

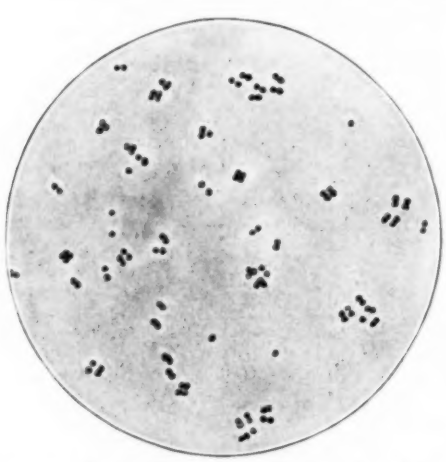

Fig. 5.—Microscopic appearance of culture.

worm, the scientific world has accepted the etiologic guilt of the trichophyton and the epidermophyton; that an investigator of such immense experience as Castellani claims the cryptococcus as the causative agent of this present disease; that properly strong antiseptics do not irritate the skin in infections produced by cryptococci but sometimes effect cure quickly and always benefit the condition.

How does one become infected with the cryptococcus? My belief is that lack of hygiene is the proper answer. One does not bear in mind sufficiently that nothing unboilable should ever be allowed to touch the skin and that towels, bed linen and underclothes should be used or worn only a few days at a time and then thoroughly boiled. Contrast this theory with actuality. Women's modern dress consists

4. Karrenberg, C. L.: The Present State of Epidermophytosis in Europe, Arch. Dermat. & Syph. **17**:524 (April) 1928.

largely of silk or of wool, both unboilable materials. Modern female custom almost demands that the naked shoulders, chest, axillae, arms and legs shall touch these unsterilizable materials. In the extremists, who believe in wearing only brassières and trunks, one may add to the list of exposed surfaces the abdomen and most of the thighs. With this idea in mind, one should read once again the principal seats of this infection as enumerated in the reports of the cases studied.

DIAGNOSIS

It is not necessary to recapitulate the clinical symptoms of cryptococcosis epidermica, but my experience has shown that in making this diagnosis, it is necessary first and last, to eliminate the possibility of: (1) eczema as a whole, (2) the soap eczema of Radcliffe Crocker, (3) the eczema psoriasiforme of Brocq, (4) aberrant pityriasis rosea, (5) erythrodermie pityriasique en plaques disseminées, (6) the premycotic stage of granuloma fungoides, (7) tinea versicolor and (8) epidermophytosis.

I believe, therefore, that the point has been reached in dermatology where to be scientifically accurate diagnostically one must call in the aid of the microscope much more frequently than one has in the past.

Cryptococcosis epidermica is not a new disease. Looking backward one can now appreciate in how many instances this dermatosis has been called eczema or something else and can well see why some of the patients have not been cured.

TREATMENT

First of all, treatment should consist of hygiene and antisepsis in every detail both of person and of clothes. Secondly, drugs and their excipients should be employed.

As cryptococcosis epidermica is apparently never a vesicular or a moist disease, and, in its later stages, is apt to be deeply infiltrative, it seems wiser to employ fats as the excipient. We have tried all the drugs which we have found useful in the treatment of epidermophytosis, but we have had even less success in cryptococcosis than we have had in epidermophytosis. After considerable experimentation, we have found the following ointment, concocted by Dr. Swartz, to be by far the most successful:

	Gm. or cc.
℞ Mercurochrome crystals	0.68
Salicylic acid	2
Petrolatum	
Hydrous wool fat, of each	16

M. Sig: Apply night and morning.

With this ointment we have had varying success, sometimes an unexpectedly rapid cure, sometimes a gradual improvement, sometimes

an unaccountable recurrence and sometimes failure. By and large, progress toward a cure is slow and as in the treatment of epidermophytosis one must be sure to continue the applications for a considerable period after the eruption has become invisible.

ABSTRACT OF DISCUSSION

Dr. Frederick D. Weidman, Philadelphia: It seems so natural to see Dr. White again in the fungus group that I cannot help discussing his paper. I will touch only one phase of his report, and that is the fulfillment of all of Koch's postulates. Dr. White did not reproduce the disease. The objection to reproducing the disease experimentally is not so great when the auto-inoculations are performed on the patients themselves; the question does arise whether it is justifiable to plant organisms on a normal person. Of course, the investigator may try things on himself, if he wishes. Some of these trials have been unfortunate, as in the case of Shelmire, who developed a severe dermatitis on the arms, but I cannot see any objection to auto-inoculation of the same organism on the patient himself.

Dr. James Herbert Mitchell, Chicago: The question of the pathogenicity of the yeastlike organisms is interesting, as it is questioned by no less an authority than Sabouraud, who insists that a streptococcus is the causative agent in many of the intertriginous dermatoses from which yeastlike organisms are recovered. He is of the opinion that the yeast is saprophytic and that by painting the skin with iodine it is possible to grow the streptococcus, which is the actual causative agent. I would like to ask Dr. White whether he has seen in his patients lesions in the large folds of the body that had all the characteristics of erosio interdigitalis. Last year I saw an obese woman who had such lesions; I recovered a white cryptococcus from the culture.

Dr. Earl D. Osborne, Buffalo: I hesitate to say much about the work we have been doing because it is far from complete, and a great deal of it was done under the supervision of Dr. Cleveland J. White. We now have a large number of cultures of cryptococci isolated from cases of all types of eczema. There are eighteen cases of positive inoculations on persons from whom the cultures were obtained. Some cultures of cryptococci were isolated from vesicopustular ringworm of the hands and feet, in association with eczematous lesions elsewhere on the body. In a number of instances, the ordinary mycelial form has been isolated from the hands and feet, and the cryptococcus from the eczematous lesions of the glabrous skin. Dr. White carried on one interesting experiment on one of the members of the staff who had had an active ringworm of the toes, with positive cultures. He was inoculated on the back, with adequate controls, and developed a positive lesion from which mycelia were recovered. After about two weeks, instead of the mycelial forms, a mosaic form was found, and two weeks later, only the yeast or cryptococcus variety was present. Unfortunately, it was necessary for the patient to leave Buffalo before further inoculation experiments could be done.

Recently we have been following up the work of Draper, on *Endomyces albicans* and applying his work with the thrush fungus to cultural experiments with cryptococci. As is well known, smear examination of fresh material shows the mycelial type, whereas cultures on the ordinary mediums show the yeastlike forms of *Endomyces albicans*. Draper found that he could plant the yeastlike forms of thrush fungi on carrot infusion agar, and that the mycelial forms would develop. He analyzed carrot ash and found its content surprisingly high

in the various forms of phosphates. He found that by incorporating these phosphates in the ordinary mediums and by growing the cultures under reduced oxygen tension, the mycelial forms of thrush fungi would develop from the yeastlike forms. Just recently, we have applied these facts to our study of cryptococci and have been surprised to find that of twenty-eight strains of cryptococci isolated from different cases, fourteen are developing mycelial forms on this special phosphate medium when grown under conditions of decreased oxygen tension. I think that this points to some relation between the growth of mycelium on certain parts of the body and yeastlike forms on other parts of the glabrous skin.

DR. CHARLES J. WHITE, Boston: I admit the propriety of the criticism of Dr. Weidman that I should try to produce the disease by inoculation. This is difficult from the patient's point of view, for those who have a disease that keeps them awake at night do not wish more of it. Call it idiosyncrasy if you will, there may be plenty of persons who cannot acquire a specific infectious disease, and one would have to bear this fact in mind in artificial inoculations. Absence of positive results, therefore, would prove nothing.

I have not seen any case which suggested blastomycetica interdigitalis. Our cases have all been dry rather than moist.

MULTIPLE MILIARY OSTEOMAS OF THE SKIN

REPORT OF A CASE*

J. G. HOPKINS

NEW YORK

CASE REPORT

History.—The patient, a housewife, aged 44, presented a persistent acne-form eruption of ten years' duration. Shortly before the onset of inflammatory lesions, she had had numerous blackheads which have since become less troublesome. For years the eruption consisted of small papules and pustules. Two or three years previous to admission, she had first noticed small, hard, white nodules in the skin—first on the posterior portions of the cheeks; later over the forehead. She was confident that they varied in size from day to day and at times disappeared. The papular and pustular lesions continued to develop. She was given a series of ten x-ray treatments, which was followed by temporary relief. About two years ago, she developed a series of furuncles over the face and body which persisted in spite of treatment by x-ray, stock vaccine and restricted diet. A culture from the boils was reported to show "both streptococcus and staphylococcus." After a series of injections of an autogenous vaccine, the boils disappeared. The acne, however, did not improve. The eruption varied in severity from time to time, but for two years there had not been a permanent change.

The patient had not had any acute illness since childhood, with the exception of occasional mild infections of the upper respiratory tract. She had suffered, however, from many indefinite conditions, the nature of which could not be determined. She had had attacks of nausea, attributed to chronic appendicitis, and of neuritis, attributed to a streptococcus infection. At the time of the furunculosis she was thought to have a hyperglycemia, but this could not be confirmed.

Three years before, an artificial menopause was induced by radium on account of fibromyomas. Since then she had been troubled by flushes and attacks of dizziness and dyspnea. She had taken various glandular preparations, including those prepared from the ovary and the thyroid and parathyroid glands.

The skin had always been clear without comedone formation, until after she had reached the age of 30. She was addicted to the use of various cosmetics. For some time she had applied a hair dye—apparently paraphenylen-diamine—about once a month.

Physical Examination.—Except for the dermatosis of the face described subsequently, the observations were essentially normal.

The patient was a well developed, well nourished woman, somewhat neurotic, but apparently in good physical health. The heart, lungs and abdomen were normal. An examination by Dr. Louis F. Bishop made previously had shown a slight elevation in blood pressure and signs of slight arteriosclerosis; but a roentgenogram and electrocardiogram of the heart did not show anything of particular interest.

Results of examination of the blood were reported as follows: The blood count showed hemoglobin, 79 per cent; red blood cells, 4,464,000; white blood cells,

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*From the Department of Dermatology, Vanderbilt Clinic, Columbia University.

5,400; the differential count revealed: polymorphonuclears, 55; small mononuclears, 33; large mononuclears, 6; eosinophils, 0; basophils, 3, and transitionals, 3. The red cells were normal, except for a slight central pallor.

The blood chemistry showed: calcium, 10.8 mg.; sugar, 107.1 mg.; urea nitrogen, 13.04 mg.; uric acid, 2.99 mg.; chlorides, 495 mg., and cholesterol, 250 mg. per hundred cubic centimeters of blood.

The basal metabolism was 19 per cent below the average normal.

Fig. 1.—Photograph of the patient after a number of tumors had been removed. It shows the pale papules; one with a follicular opening directly over it and one inflammatory lesion just below the mandible.

Urinalysis was as follows: reaction, acid; specific gravity, 1.028; albumin, none; dextrose, none, and indican, not in excess. The microscopic examination did not show any casts, few epithelial cells and leukocytes, and a large amount of calcium oxalate. There seems to be nothing in these observations which might explain the lesions of the skin.

Lesions of the Skin.—The dermatosis consisted chiefly of inconspicuous flat papules, from 2 to 3 mm. in diameter, some whitish and some a pale red. They were numerous over the forehead and temples, but were scattered also on the

cheeks, chin and sides of the neck below the jaw. Many were apparently follicular. There were, also, scattered pustules and a few deep, hard inflammatory nodules. A few milia were seen below the eyelids. Comedones were not noted.

The condition was thought to be an acne, and the patient was treated by x-ray. After a month the pustular lesions subsided, and the papules were less red, but still present. A few were still inflamed with deep induration. On incising one of these, a stony mass was encountered firmly embedded in the corium. It was freed and pried out with some difficulty by using the point of a bistoury, and was found to be a smooth, oval, compact, calcareous mass of about 1 by 2 mm. Other papules were explored and found to contain similar grains. Some were so superficial as to give a whitish color to the papule, but most were deep in the cutis. Careful palpation revealed other similar particles which did not cause any change in the appearance of the surface. None of the stones could be expressed or made to present at the follicular orifices by pressure. They did not seem to be connected with the follicles and could be removed only by cutting and tearing away

Fig. 2.—Photograph of twenty-two of the osteomas which were removed. One in the lower portion of the picture shows the coffee-bean formation; × 4 diameters.

closely adherent surrounding fibers. In several long sessions, from thirty to fifty of these grains were finally removed. A small amount of pus was obtained on puncturing some of the lesions, and the freeing of the stones always caused marked bleeding.

The gross appearance of these grains is shown in figure 2. They varied from 0.5 to 2 mm. in diameter. All were hard and compact; a few showed irregular projections, but most were smoothly rounded. A few were firmly bound together in pairs, with their proximal sides flattened in a coffee-bean form. Qualitative tests showed that they contained phosphates, carbonates and calcium.

Histologic Examination.—Two small confluent papules were excised from near the hairline. The stone was removed from one, and sections were made for study of the surrounding tissue. The other was decalcified and sectioned. To my astonishment it showed the typical structure of bone. It was lamellated in concentric rings which appeared to have formed about two or more centers and then coalesced. There were numerous lacunae, most of which contained stainable nuclei. One or two haversian canals were seen containing small vessels. In one larger cavity were a binuclear cell resembling a myeloplax and a row of cuboidal

cells along one margin resembling osteoblasts. In another section was a still larger space containing fat tissue and capillaries. These were undoubtedly marrow cavities.

This miniature osteoma was surrounded by a thin capsule of fibrous tissue beyond which lay somewhat rarefied collagen. At one point a sebaceous gland lay almost in contact above the bone, and a coil gland was close below. No direct

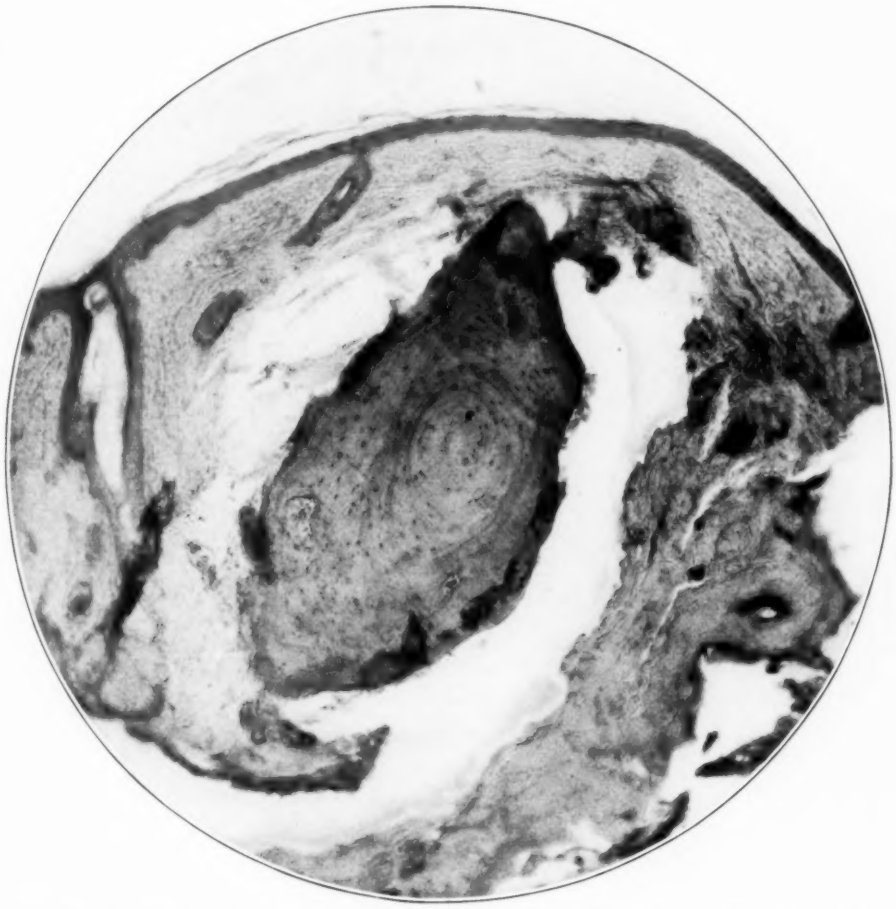

Fig. 3.—Photomicrograph of excised lesion. A small marrow cavity is seen at the left and a haversian canal at the bottom of the nodule. Above the osteoma is a small hair follicle displaced upward by the tumor; × 50 diameters.

connection with either could be found. A large hair follicle ran obliquely to one side, and in another section a small follicle lay obliquely above it as if displaced by the growth of a mass without. In one place a convoluted cord of concentric fibers with eliptical nuclei among them was attached to the lower pole of the osteoma. In a notch near this, an arteriole appeared to enter the bone. The cord itself resembled an obliterated artery, but no remains of endothelium could be made out. On account of the hardness of the material, only occasional rather

thick sections could be obtained, and these structures could not be followed in series. Two other stones removed without any surrounding tissue were fixed, decalcified and sectioned. They, also, showed bone structure with concentric lamellae and bone corpuscles. No marrow was found in these specimens.

No lesion of importance was found in the surrounding tissue. The epidermis was normal. In the papillary and subpapillary layer the elastic fibers were markedly swollen, but no more so than is frequently seen in skin from the face

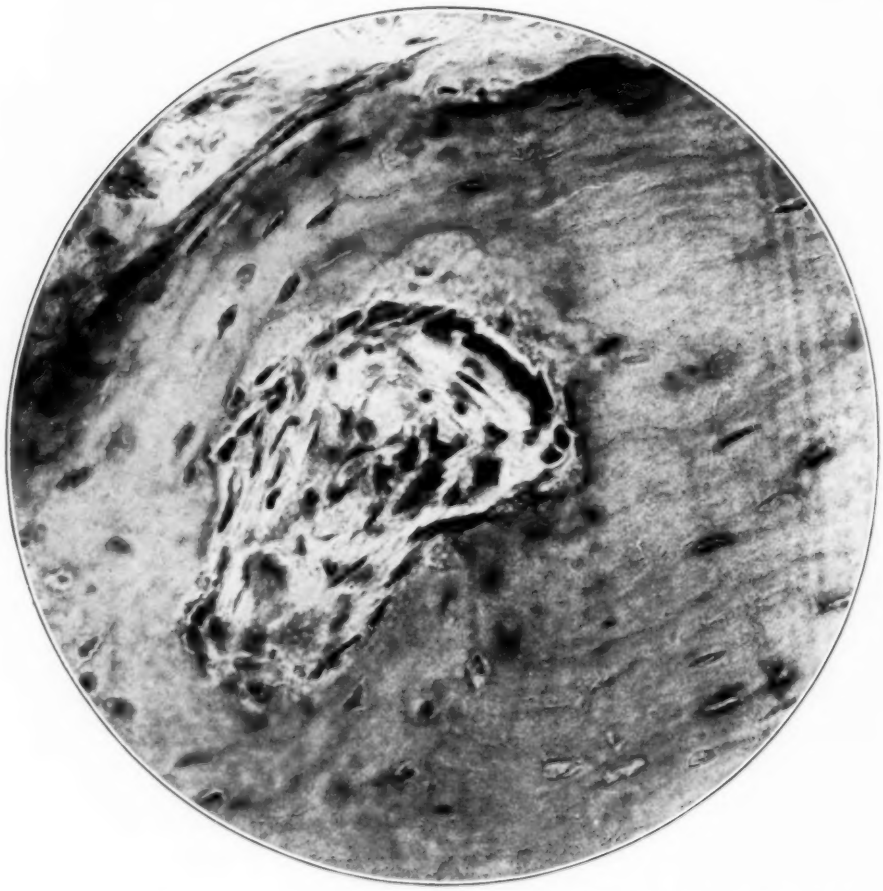

Fig. 4.—The same slide as in figure 3. It shows the lamellated structure with bone corpuscles, the marrow cavity with osteoblasts along the upper border and a myeloplax near the lower end of the cavity; × 400 diameters.

of adults. About the bone was a narrow zone in which a meshwork of delicate fibers replaced the normal collagen. Infiltration was not visible. The structure of the hair follicles, sebaceous glands and coil glands appeared normal.

Summary of Observations.—This patient had, then, multiple miliary bony nodules scattered in the corium over the face and upper part of the neck. Some did not cause a visible change in the skin; others were apparent as hard, white nodules and about others were foci of inflammation producing papules and pustules.

Clinically, the lesions resembled a mild acne, but were rather trivial as can be seen in figure 1. Apparently a true acne, with comedone formation, had preceded the development of these nodules by about eight years. It is possible, however, that they had long been present and had acted like comedones in inducing inflammation of the foreign body type which simulated acne.

CASES PREVIOUSLY REPORTED

It seems that this condition is unusual. Mention of it has not been found in modern textbooks of dermatology, and no cases have been reported in the journals of recent years.* It was known, however, to Virchow [1] whose description applies accurately to this case:

> Probably the rarest and at the same time most remarkable type of heteroplastic bone tumors are the small osteomas of the skin which develop at times in old people. These are of interest on account of their multiplicity and, also, because they represent the smallest known kind of medullated osteomas. They appear as small sand-like grains in the cutis, usually in its superficial layers. At times they, also, reach into the subcutis . . . I once found a great number of nodules of this kind—most of millet seed size—in the skin of the face of a young man 28 years of age.

Virchow shows a section of one of these small round osteomas which was made up of concentric lamellae with numerous bone corpuscles and showed a central round marrow cavity. Whether or not this man of 28 years was the only case he observed, Virchow does not state. The implication is that he knew of other cases.

The only one at all similar to which Virchow refers was one described by Wilckens [2] six years before. It seems that there was preserved in the pathologic museum at Göttingen a vial of sixteen stones varying in size from that of a pea to that of a hazelnut. These had been removed by A. G. Richter from the skin of a patient with gout, some from the abdominal wall, others from the arms. A clinical record of the case had not been preserved. Wilckens, who was writing his thesis on calcification and ossification in the skin, examined these microscopically and found that they showed the structure of bone and that some contained islands of cartilage.

In 1882, Weber,[3] in his chapter on diseases of the skin in Pitha and Bilroth's Handbook, describes these small multiple osteomas of the

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* Since this report went to press, reference to a similar case has been found in the seventh edition of Dr. R. L. Sutton's "Diseases of the Skin" (St. Louis, C. V. Mosby Company), p. 747. This was a case presented by Artz before the German Dermatological Society in 1925, of which a brief note appears in the Arch. f. Dermat. u. Syph. **151**:396, 1926.

1. Virchow, R.: Die krankhaften Geschwülste, Berlin, A. Hirschwald. 1864. vol. 2, p. 103.

2. Wilckens, Martin: Ueber die Verknocherung und Verkalkung der Haut, Inaugural Abhandlung Göttingen, W. F. Kaestner, 1858, p. 18.

3. Weber, O., in Pitha and Billroth: Handbuch der allgemeinen und speciellen Chirurgie, Stuttgart, Ferdinand Enke, 1882, vol. 2, p. 50.

face. His description, however, is a transcript from Virchow almost verbatum. There is nothing to suggest that he knew of more recent cases. Two years later Cornil and Ranvier [4] in their manual of histopathology mention Virchow's case and state that they had observed a similar one.

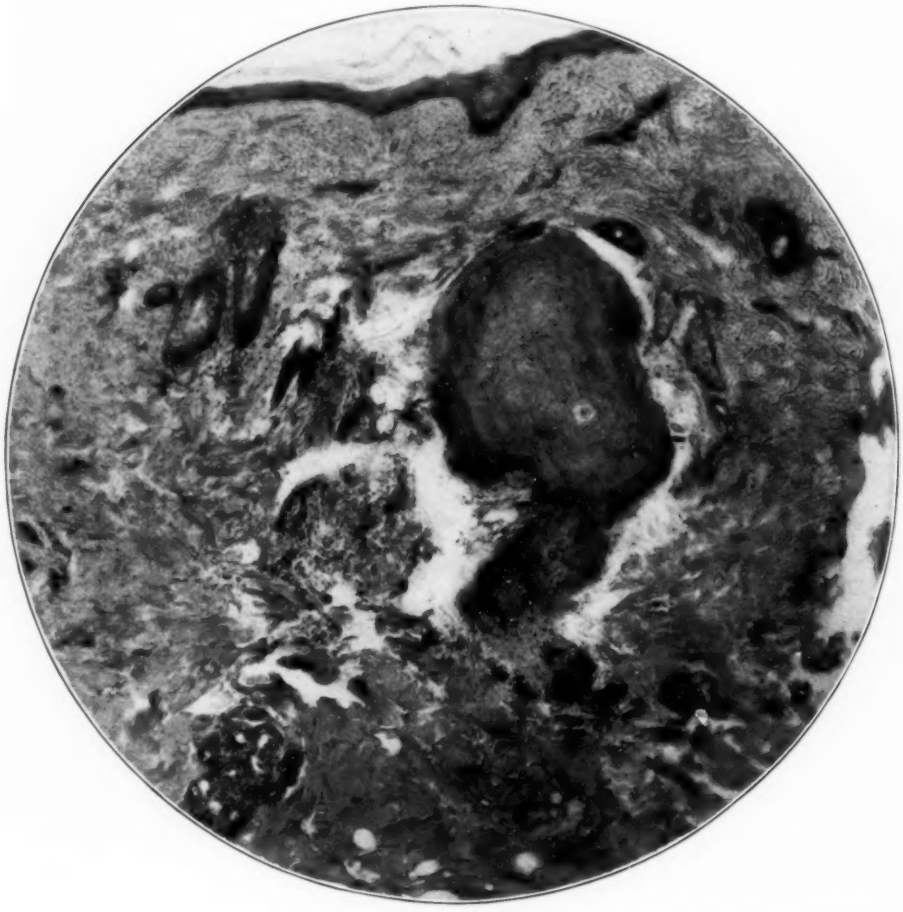

Fig. 5.—Low power magnification of another section, through the same nodule, showing connection with an obliterated artery (?) at the base; × 60 diameters.

Since then no report of minute disseminated cutaneous osteomas has been found, so that the case of Wilckens, the case or cases of Virchow and that of Cornil and Ranvier seem to be the only definite instances on record.

4. Cornil and Ranvier: Manuel d'histologie pathologique, Paris, Germer and Bailliere, 1884, vol. 1, p. 270.

TYPES OF BONE DEPOSITS

There are, however, reports of cases of cutaneous osteomas or bone deposits which seem different in character from those in the case here described. It is impossible at present to classify them satisfactorily, but they may be grouped under the following heads.

Development of Bone in Areas Not the Site of a Previous Lesion.—Here might be placed Heidingsfeld's [5] unique case of a pigmented hairy nevus of the chin which contained numerous miniature osteomas. These were compact ovoid particles lying between the hair follicles, but unconnected with them. They resemble the smaller tumors in the case here reported. Larger and more diffuse plates or blocks of bone in the scalp have been described by Bruns, Salzer, Schaffer and Becker, and Strassberg has described a similar tumor in the aponeurosis of the skull.

Other instances of apparently primary development of bone in the skin are Coleman's case of a bony plaque in the sole of the foot of a 6 year old girl and the remarkable one reported by Taylor and MacKenna of multiple bony plaques and grains which were distributed through the skin of an infant, aged 15 months. These cases are well reviewed in Strassberg's [6] and in Becker's [7] reports. The chondro-osteoma in the skin below the ear of a 2 year old child described by Carl,[8] may also belong in this group. In these cases no preceding lesion was found, and the growths were apparently true tumors—osteomas. In each of these cases there is some feature which suggests the possibility of origin from an embryonal rest: the occurrence in a nevus, the association with extensive nevi elsewhere (Becker), the proximity of the tumors to the skull or their development during infancy.

The bonelike and cartilaginous thickening described by Alexander Keiller [9] in the skin of a new-born infant has been mentioned since as an instance of bone formation. Bone structure was not, however, demonstrated, and Keiller's description suggests sclerema neonatorum.

Development of Bone in Epithelial Tumors.—Wilckens observed bone in an epithelioma, and in 1881 Malherbe described twelve cases of calcified epitheliomas and sebaceous adenomas in six of which bone was demonstrated. Eve, Hutchinson, Thorn and others have reported similar cases. There has been some controversy concerning whether the tumors were true epitheliomas. Calcification seems always to precede the bone formation which is apparently a metaplasia rather than a new growth.

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5. Heidingsfeld, L. M.: Arch. f. Dermat. u. Syph. **92**:337, 1908.
6. Strassberg, M.: Virchows Arch. f. path. Anat. **203**:131, 1911.
7. Becker, S. William: Osteosis Cutis, Arch. Dermat. & Syph. **10**:163 (Aug.) 1924.
8. Carl, W.: Arch. f. Dermat. u. Syph. **100**:183, 1910.
9. Keiller, A.: London and Edinburgh M. J. **3**:694, 1843.

Calcareous concretions in the contents of sebaceous and dermoid cysts are not extremely rare. Most writers on osteomas of the skin refer also to the development of bone in such lesions. There are a few, but only a few, definite reports of this. Klebs [10] was perhaps the first to demonstrate it. Strassberg collected six definite cases from the literature and a number of doubtful ones and described one case of his own. Most of these were epidermoid cysts of more than 1 cc. in diameter and were isolated lesions They therefore do not show close analogy to the case herein described. Sehrt,[11] however, in describing a small tumor of this type, 4 mm. in diameter, from the elbow of a young girl goes on to state that the contents of retention cysts of the skin follicles may undergo "calcification and ossification." He mentions two instances of men with from forty to sixty stones in the scrotum. These were millet-sized grains in the skin follicles. He does not say explicitly that bone structure was demonstrated. Subsequent writers refer, however, to the development of bone in these follicular calculi. Such statements are apparently based on Sehrt's inconclusive report; as no proved instance of such multiple follicular bone nodules seems to have been recorded. The rather extensive bibliography of these cases can be found in the reports of Strassberg [6] and of Nicholson.[12]

Development of Bone in Areas of Inflammation or Tissue Degeneration.—Rokitansky, Askanazy, Strassberg and Harris have observed bone in scar tissue. Strassberg, also, reports it in skin which was the site of a varicose dermatitis and Meyer, following a chronic ulcer of the leg, which was probably syphilitic. Pollitzer observed bone in an area of the cheek previously occupied by a plaque of scleroderma. Probably of similar nature are the subcutaneous bone nodules described by Chiari and by Fraenkel [13] which develop in areas of fat necrosis and calcification secondary to disease of the small arteries.

These are instances when bone seems to have developed by metaplasia—that is by change in the tissue building activity of the preexisting tissue cells rather than by the inclusion of cells having a special osteoblastic function.

The capacity for bone formation in calcified areas is widespread among the tissues (Wells).[14] It is not uncommon in the lungs, in the meninges, in the eye or in the walls of blood vessels; in fact it may occur in practically any organ of the body. Experimentally, it may be pro-

10. Klebs, E.: Handbuch der pathologischen Anatomie, Berlin, A. Hirschwald, 1869, vol. 1, p. 32.

11. Sehrt, E.: Virchows Arch. f. path. Anat. **200**:395, 1910.

12. Nicholson, G. E.: J. Path. & Bact. **21**:287, 1917.

13. Fraenkel, E.: Dermat. Wchnschr. **75**:1027, 1922.

14. Wells, H. G.: Calcification and Ossification, Arch. Int. Med. **7**:721 (June) 1911.

duced in the kidney with some regularity by ligation of the renal artery (Harvey).[15] The necessary conditions seem to be a compact mass of calcium salts and a sufficiently vascular granulation tissue about it.

In scars, in scleroderma and in the fat necrosis of the type mentioned, calcification is relatively not uncommon. In Pollitzer's case and in those of Chiari and Fraenkel areas of calcification were demonstrated about the bone nodules. In Strassberg's two cases, however, calcium deposits could not be found. Moreover, in one of them both bone and cartilage were developed in a laparotomy scar—a situation which would seem to exclude the possibility of their origin from misplaced osteoblastic cells. The absence of calcium deposits about bone does not, therefore, exclude the possibility that it has developed by metaplasia.

COMMENT

The nature and cause of the development of bone in the present case could not be determined. There was no apparent connection with the glandular structures. The absence of any abnormality in the adjacent glands makes it improbable that these organs were the site of the bone formation. The absence of a well defined wall about the nodule seems to exclude the possibility that the bone developed in a follicular cyst. Areas of necrosis or calcification were not found in the minute specimen of skin examined; however, as Strassberg has shown, this does not exclude origin by metaplasia. The elastic tissue degeneration was no greater than is commonly found in the skin of the face of adults and seems hardly sufficient to explain calcium deposition. There was no evidence of destruction of bone elsewhere to account for a metastatic calcification.

The histologic appearance of the little tumors resembled those pictured by Heidingsfeld more than any others, excepting those of Wilckens and Virchow. This suggests the possibility that the tumors developed from embryonic rests and were in the nature of bone nevi.

Virchow thought that in his case the tumors developed in the connective tissue. It would seem possible that acne or some disease of the small vessels produced areas of necrosis in the corium in which calcium and later bone were laid down. The appearance of a structure resembling an obliterated artery, connected with one pole of the nodule that was sectioned, suggests that the bone may have been formed in such a vessel. These would seem the three possible hypotheses. The evidence, however, is inconclusive as to whether the nodules were tumors or metaplasias. For the present it seems best to follow Virchow in calling them osteomas.

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15. Harvey: J. M. Research **17**:25, 1907.

PITYRIASIS RUBRA (HEBRA)*

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In 1868, Hebra [1] described under the term pityriasis rubra a rare disease, which had as its essential features deep red coloration and bran-like scaling involving the greater part or all of the cutaneous surface. Hebra's original description was modified and enlarged by Kaposi [2] and Jadassohn,[3] who gave us the present conception of the disease.

The cases described by Hebra were well advanced when first observed, but Kaposi saw two cases in the early stages of the disease, which began as redness and scaling in the regions of the flexures. When the disease is once established, it remains as it is from beginning to end without changing its character. The skin does not show infiltration or weeping, and papules, pustules or vesicles are not formed. The subjective symptoms consist of slight itching and chilliness.

The disease is essentially chronic in its course, lasting many years. As a result of the long-standing inflammatory process, the skin shows secondary changes. The hair falls out, and the nails become friable and are raised from their beds by the accumulation of horny masses beneath. Some cases may show localized or diffuse pigmentation and an associated enlargement of the superficial lymph nodes. Eventually atrophy of the skin ensues, producing ectropion of the eyelids and immobility of the joints, and ulcers may develop over points of pressure. In the late stage, the patient becomes cachectic, and death results from some intercurrent disease or exhaustion.

These characteristics do not make up an absolutely typical picture, since, according to Hebra, other forms of exfoliative dermatitis may at times in their course resemble pityriasis rubra, and, in differentiating it from other types, reliance must be placed more on negative than on positive characteristics.

Of the twenty-one cases observed by Hebra and Kaposi, only four of Hebra's cases are available in the literature for analysis.

The first patient [4] was a man, aged 62, in whom the eruption had been present ten months. In addition to the generalized scaly dermatitis,

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1. Hebra, F.: Diseases of the Skin, The New Sydenham Soc. Translation **2**:69, 1868.

2. Kaposi, M.: Pathologie und Therapie der Hautkrankheiten **1**:447, 1893.

3. Jadassohn, J.: Arch. f. Dermat. u. Syph. **23**:941, 1891; **24**:85, 273 and 463, 1892.

4. Hebra, F.: Bericht. des allg. Wien Krankenh. 1874, p. 205.

the palms and soles were thickened, and the nails were raised from their beds by thickened epithelium beneath. Under treatment, the condition improved.

The second patient,[5] a man, aged 59, had a generalized, scaly, pigmented dermatitis for four years, beginning with smarting pains, followed by intensive itching. Subsequently numerous ulcers developed over the body, and the patient became emaciated and died.

The third patient [6] was a woman, aged 54, with a condition of eight weeks' duration. Examination revealed a generalized, red, scaly, pigmented eruption with papules varying in size from that of a lentil to that of a millet seen over the trunk and extremities and over the dorsa of the hands and fingers. This patient died of a terminal pneumonia.

The last patient,[7] a man, aged 55, had had a diffuse scaly dermatitis for eight years. There was apparently no atrophy of the skin. Death resulted from a hemorrhagic pericarditis.

A review of these cases reveals in each instance a divergence from the original description. The first patient left the clinic improved, while the second, with the intense pruritus in the beginning and the subsequent development of ulcers, suggested the clinical picture of granuloma fungoides. The third case was of short duration, and the presence of papules over the trunk and extremities was striking. In spite of the long duration of the last case, mention was not made of terminal atrophy.

In addition to these cases, Kaposi [2] mentioned briefly one case in which he believed that the patient was cured and another in which, three times in the course of two years, spontaneous gangrene of the skin occurred.

Much confusion exists in the literature as to the characteristics of this disease. This confusion is evidenced by the desire of many authors to enlarge on the original conception and to admit to this class cases characterized by universal scaling and redness that obviously are other forms of exfoliative dermatitis. Jadassohn [3] agrees with Kaposi [2] in admitting cases in which the termination is not fatal. He would also modify the original description and include cases which show more scaling, itching and infiltration of the skin. In his excellent review of the subject, he gathered from the literature all cases reported as pityriasis rubra of Hebra and divided them into two groups. The first group is designated as true examples and the second as probable but not definite illustrations, in spite of the fact that the latter cases had been reported as Hebra's type.

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5. Hebra, F.: Ibid, 1876, p. 267.
6. Hebra, F.: Ibid, 1877, p. 264.
7. Hebra, F.: Ibid. 265, 1877; 270, 1878.

The subject is further complicated by the indiscriminate use of the terms pityriasis rubra and exfoliative dermatitis by the British. Baxter,[8] Smith,[9] and also Mackenzie [10] were of the opinion that pityriasis rubra of Hebra was only a chronic form of exfoliative dermatitis. Unna [11] advanced the belief that many cases begin as seborrheal eczema. Brocq [12] and others described a benign form. Fagge [13] expressed the belief that this disease was a severe form of eczema. Jamieson,[14] Foster [15] and Bowen [16] advocated a more liberal interpretation of the qualifications that included cases in this category.

Many theories have been advanced to explain the etiology of this disease, but none of them has met with general approval. At a recent meeting of the Chicago Dermatological Society,[17] when a case diagnosed pityriasis rubra of Hebra was shown, considerable doubt as to the validity of this term was expressed by Dr. Wile and by Dr. Pusey. It was at Dr. Wile's suggestion that this study was undertaken.

A review of the literature tends to show that cases reported as pityriasis rubra of Hebra, with similar clinical observations but with distinct etiologic differences, fall into well defined groups. One group is associated with active tuberculosis; a second is allied with the lymphoblastomas; a third is made up of cases secondary to underlying dermatoses such as eczema and psoriasis; a fourth comprises those cases suggesting other disease entities, and a fifth is made up of cases of chronic exfoliative dermatitis of obscure origin.

These groups are presented in the accompanying table.

Pityriasis of Rubra Hebra

	Number	Autopsies
Cases related to tuberculosis	11	9
Cases related to lymphoblastomas	8	4
Cases resembling generalized eczema and psoriasis	9	1
Cases suggesting other disease entities	3	0
Cases of chronic exfoliative dermatitis	43	9

8. Baxter: Brit. M. J. **2**:79 and 119, 1879.

9. Smith, W. G.: Brit. J. Dermat. **10**:437, 1898.

10. Mackenzie, S.: Brit. J. Dermat. **1**:285, 1889.

11. Unna: Tr. Internat. Cong. Derm. & Syph., J. Cutan. Dis. **7**: 384, 1889.

12. Brocq: Arch. gén. de méd. **2**:200, 1884.

13. Fagge, C. H.: Guy's Hosp. Rep. **13**:208, 1867.

14. Jamieson: Edinburgh M. J. **25**:879, 1880.

15. Foster: J. Cutan. Dis. **25**:164, 1907.

16. Bowen: J. Cutan. Dis. **28**:1, 1910.

17. Oliver, E. A., and Finnerud, C. Y.: Pityriasis Rubra of Hebra (?) abstr. Arch. Dermat. & Syph. **17**:429 (March) 1928.

THE RELATION OF PITYRIASIS RUBRA OF HEBRA TO TUBERCULOSIS

Eleven of the cases reported in the literature as pityriasis rubra of Hebra had an underlying active tuberculosis. Autopsy observations were recorded in nine.

The relation of pityriasis rubra of Hebra to tuberculosis was first emphasized by Jadassohn.[3] In the sixteen typical cases of the disease that he compiled from the literature, unmistakable evidence of tuberculosis was found in five. Of these five cases, only two [18] showed active visceral tuberculosis; the other three showed healed apical lesions. One may be justified in assuming that the healed pulmonary tuberculosis in these three cases was an incidental observation and can in no way have an etiologic relationship to the generalized cutaneous process. This author added two cases observed by himself, in one, evidence of visceral tuberculosis was revealed by postmortem observations; in the other, tuberculosis of the lymph nodes was demonstrated. A case similar to the latter has been reported by Müller,[19] in which tubercle bacilli were found in the pus from a suppurating axillary lymph gland. The autopsy performed by Fabry [20] showed only healed pulmonary tuberculosis. Jadassohn [3] also cited a case diagnosed pityriasis rubra of Hebra in which histologic examination of the skin showed definite tuberculous lesions in the dermis. Cerebral tuberculosis was found at autopsy in Fleischman's [21] case. Of particular interest are the cases reported by Elliott,[22] Kanitz [23] and Fiocco.[24] In addition to the generalized exfoliative dermatitis, these cases showed clinically marked generalized adenitis, and at autopsy widespread active tuberculosis. Elliott was of the opinion that the tuberculosis in his patient was secondary, and advanced as his reason the fact that the eruption preceded by many years evidence of tuberculosis. Kanitz believed that at least a portion of the cases of pityriasis rubra of Hebra have a tuberculous basis. In Fiocco's case tubercle bacilli were found in the skin. Foster [25] reported a case of long standing, which at autopsy showed active pulmonary tuberculosis.

Bruusgaard,[26] Symmers [27] and others recorded cases of exfoliative dermatitis resembling pityriasis rubra of Hebra, but not classified as such, which at autopsy revealed active tuberculosis.

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18. Hebra, H.: Vrtljschr. f. Dermat. u. Syph., 1876, p. 508.
19. Müller, O.: Arch. f. Dermat. u. Syph. **87**:255, 1907.
20. Fabry: Arch. f. Dermat. u. Syph. **91**:85, 1908.
21. Fleischman: Vrtljschr. f. Dermat. u. Syph., 1877, p. 201.
22. Elliott: J. Cutan. Dis. **15**:35, 1897.
23. Kanitz: Arch. f. Dermat. u. Syph. **81**:259, 1906.
24. Fiocco: Dermatologische Studien in Unna, P. G.: **1**:483, 1910.
25. Foster, W.: Arch. f. Dermat. u. Syph. **93**:389, 1908.
26. Bruusgaard: Arch. f. Dermat. u. Syph. **67**:227, 1903.
27. Symmers, D.: J. Cutan. Dis. **37**:1 (Jan.) 1919.

In the cases described in which active tuberculosis was shown, it seems logical to assume that the exfoliative dermatitis bears a definite symptomatic relation to the underlying process. In the instances in which tuberculosis of the lymph node occurred, the eruption may conceivably be said to be produced by actual metastases of organisms to the skin or by toxins offered to it for excretion (Symmers [27]). In the patients showing visceral tuberculosis, it may be assumed that the toxin is carried by the blood stream to the skin from deeper-seated foci.

THE RELATION OF PITYRIASIS RUBRA OF HEBRA TO DISEASES OF THE LYMPHATIC SYSTEM

Many examples of the association of diseases of the lymphatic system with scaling erythroderma have been recorded in the literature. In this group, designated lymphoblastomas, are included Hodgkin's disease, granuloma fungoides, lymphosarcoma and leukemia. The observation has also been made that the cutaneous change may precede by months or years evidence of the underlying pathologic process.

Pusey,[28] in his text, and Arndt,[29] in a paper presented before this section in 1914, called attention to the fact that many cases reported in the past as pityriasis rubra of Hebra had a leukemic basis.

Eight cases were reported in the literature as pityriasis rubra of Hebra which had an associated lymphoblastomatous basis. Autopsy reports were recorded in four.

The first suggestion of the relation of Hebra's disease to the lymphoblastoma occurs in one of the original cases.[5] This case is the one mentioned previously in which severe itching and generalized scaling and redness of the skin preceded by four years the development of numerous ulcers, suggesting the clinical picture of granuloma fungoides. About ten years later Elsenberg [30] recorded a case which showed an increase in white blood cells, and examination of an axillary gland revealed a leukemic structure. In 1894, Peter [31] described a case associated with pseudoleukemia which at autopsy showed a lymphatic hyperplasia of the superficial and deep lymph nodes. Several years later, Nicolau [32] reported a similar case, emphasizing its similarity to the Hebra form, but preferring to classify it under the heading of a universal pseudoleukemic exanthem. He maintained that cases of this type should be separated from pityriasis rubra of Hebra. In a typical example of the disease

28. Pusey: The Principles and Practice of Dermatology, ed. 4, 1925, p. 1109.

29. Arndt, G.: Diseases and New Growths of Lymphatic Origin, J. A. M. A. **63**:1268 (Oct. 10) 1914.

30. Elsenberg: Vrtljschr. f. Dermat. u. Syph., 1887, p. 727.

31. Peter: Dermat. Ztschr. **1**:345, 1894.

32. Nicolau: Ann. de dermat. et syph. **5**:753, 1904.

studied by Boglepoff,[33] lymphosarcoma was found at autopsy. This author also cited a case described by Bourgsdorff, who found lymphosarcoma primary in the cervical glands with metastases in the viscera. The case reported by Mook [34] had an associated lymphatic leukemia. After briefly reviewing the literature and describing a case of pityriasis rubra associated with pseudoleukemia, Audry and Nanta [35] insisted that this disease can only be a particularly malignant and advanced form of leukemic erythroderma. More recently Whitfield [36] presented a case with observations suggesting a subleukemic lymphadenosis.

Cases closely related to this type characterized by disturbances in the lymphatic system, but in which the diagnosis of pityriasis rubra was not definitely made, were described by Wise,[37] Symmers,[27] and Miller.[38] In Miller's case, the exfoliative dermatitis preceded the development of a Hodgkin's disease by three and one half years..

In the third group, I have placed those cases recorded as pityriasis rubra of Hebra which appear from the description to be cases of exfoliative dermatitis complicating eczema and psoriasis. Illustrations of the former have been reported by H. Hebra,[39] Fagge,[13] Brocq,[40] Demitsch,[41] and Stout,[42] and of the latter by Schwimmer,[43] Mackenzie,[44] Pye-Smith [45] and G. H. Fox.[46] In Fagge's [13] case an autopsy revealed only a terminal pneumonia. In all these cases the generalization of the process may have resulted from stimulating local applications.

The fourth group embraces three cases that strongly resemble, in their clinical description and course, acute disseminated lupus erythematosus,[47] pityriasis rubra pilaris [48] and pemphigus and pemphigus foliaceus.[44]

The fifth group, including by far the greatest number of cases, contains examples of chronic exfoliative dermatitis of obscure etiology. Cases in which the patients have recovered, have been recorded by

33. Boglepoff: Arch. de med. exper. et d'anat. path. **19**:705, 1907.
34. Mook: J. Cutan. Dis. **26**:408, 1908.
35. Audry and Nanta: Ann. de dermat. et syph. **7**:329, 1918-1919.
36. Whitfield: Brit. J. Dermat. **38**:448, 1926.
37. Wise, F.: J. Cutan. Dis. **35**:669 (Oct.) 1917.
38. Miller, H. E.: Arch. Dermat. & Syph. **17**:156 (Feb.) 1928.
39. Hebra, H.: Vrtljschr. f. Dermat. und Syph., 1876, p. 524.
40. Brocq: Monatschr. f. prakt. Dermat. **9**:296, 1889.
41. Demitsch: Petersb. Med. Ztschr. St. Petersb., 1885; quoted by Jadassohn.
42. Stout: Phila. Polyclin. **4**:446, 1895.
43. Schwimmer: Orvosi hetil. **28**:377, 1884.
44. Mackenzie: Brit. J. Dermat. **1**:285, 1889.
45. Pye-Smith: Guy's Hosp. Rep. **25**:258, 1881.
46. Fox, G. H.: Tr. Sixth Internat. Dermat. Cong., 1907.
47. Moore: St. Bartholomew Hosp. Rep. **10**:125, 1874.
48. Malherbe: Ann. de dermat. et syph. **2**:346, 1921.

Jadassohn,[3] Hutchinson,[49] Brocq,[12] Doutrelepont,[50] Foster (two cases)[15] and Barthelme.[51] Distinct improvement has been noted by F. Hebra,[4] Cahn,[52] G. H. Fox,[53] Graul (four cases),[54] Little,[55] Doutrelepont,[50] Miller [56] and Mook.[34] Failure to respond to treatment was observed in nine cases [Petrini,[57] Leviseur,[58] Duhring,[59] Halle,[60] Degola,[61] Arend,[62] Tschlenow (two cases)[63] and Matzenauer [64]]. Death occurred in sixteen (Schwimmer,[43] Hyde,[65] Wallhauser,[66] Jourdanet,[67] Sellei,[68] Bowen,[69] Foster [15]), with autopsy observations recorded in nine [Tommasoli,[70] Kopytowski and Wielowieyski,[71] Tschlenow,[63] Montgomery and Bassoe,[72] Boglepoff,[33] Nobl,[73] Barthelme [51] and F. Hebra [74] (two cases)]. None of the autopsy observations offered sufficient basis to explain the dermatitis, death resulting as a rule from some intercurrent infection.

In the service of Dr. Udo J. Wile at the University of Michigan, many cases of lymphoblastomas with an associated exfoliative dermatitis have been studied during the past ten years. While in this service, I had the unusual opportunity of observing, over a long period of time, two cases of erythroderma with exfoliation which clinically bore a

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49. Hutchinson: On Certain Rare Diseases of the Skin, 1879, p. 243; quoted by Jadassohn.
50. Doutrelepont: Arch. f. Dermat. u. Syph. **51**:109, 1900.
51. Barthelme: Zwei Falle von Pityriasis, Rubra Hebrae (Inaug. Diss.), Strassburg i. E., 1902.
52. Cahn: Dissert, Wurzburg, 1884.
53. Fox, G. H.: Arch. of Derm. **1**:296, 1874.
54. Graul: Berl. klin. Wchnschr., 1900, p. 54.
55. Little: Brit. J. Dermat. **18**:435, 1906.
56. Miller, J. W.: J. Cutan. Dis. **32**:564, 1914.
57. Petrini: Cong. internat. de dermat., Paris, 1889, p. 43.
58. Leviseur: J. Cutan. & Genito-Urin. Dis. **8**:482, 1890.
59. Duhring: Phil. M. Times **10**:181, 1879-1880.
60. Halle: Arch. f. Dermat. u. Syph. **99**:247, 1907.
61. Degola: Abst., Brit. J. Dermat. **5**:221, 1892.
62. Arend: Ueber Pityriasis Rubra (Hebrae), Jena, Coburg, 1901.
63. Tschlenow: Arch. f. Dermat. u. Syph. **64**:21, 1903.
64. Matzenauer: Verhandl. d. deutsch. dermat. Gesellsch., 1901, p. 195.
65. Hyde: Chicago M. J. and Exam. **42**:113, 1881.
66. Wallhauser, H. J. F.: A Case of Pityriasis Rubra (Hebra), J. A. M. A. **59**:10 (July 6) 1912.
67. Jourdanet: Ann. de dermat. et syph. **1**:1067, 1900.
68. Sellei: Arch. f. Dermat. u. Syph. **55**:373, 1901.
69. Bowen: St. Paul M. J. **2**:91, 1900.
70. Tommasoli: Monatschr. f. prakt. Dermat. **9**:246, 1889.
71. Kopytowski and Wielowieyski: Arch. f. Dermat. u. Syph. **57**:33, 1901.
72. Montgomery and Bassoe: J. Cutan. Dis. **24**:289, 1906.
73. Nobl: Wien. med. Wchnschr. **13**:541, 1918.
74. Hebra, F. (footnotes 6 and 7).

striking resemblance to the so-called pityriasis rubra of Hebra, but which pathologically belonged to the group of the lymphoblastomas. These cases have been included by Keim [75] in a monograph dealing with lymphoblastomas. They are reported here in detail.

REPORT OF CASES

CASE 1.—A man, aged 56, gave a history of an eruption which began six years before as an "eczema" of the lower legs. The process spread gradually, until four years later the entire body was involved.

Examination revealed a generalized scaly dermatitis with an associated dull reddish discoloration of the skin. On palpation the skin was found to be diffusely infiltrated. The palms and soles showed a marked hyperkeratosis and numerous deep fissures, interfering seriously with motion. Involving the ankles and extending over the lower third of the legs were numerous papillomatous overgrowths. The nails were thickened, friable and elevated from their beds by horny masses. There was a generalized thinning of the hair. The lower lids were ectropic, as is shown in figure 1. There was a marked generalized painless lymphadenitis which was most apparent in the groin. This is illustrated in figure 2. The spleen and liver were palpable. A blood count on admission revealed 30,500 white blood cells with a lymphocytosis of 66 per cent. Repeated examinations of the blood during the period of observation showed a persistent leukocytosis, the highest count being recorded in November, 1923, at which time there were 85,000 white blood cells. There was an absolute, permanent and progressive increase in the percentage of lymphocytes, the maximum occurring in October, 1923, when 94.5 per cent of lymphocytes were counted.

Several biopsies of the skin taken from different areas showed a bandlike lymphoblastomatous infiltration in the papillary layer of the corium.

The patient was under observation almost constantly until his death, which occurred over four years after his first visit to the clinic. This was about ten years after the beginning of the cutaneous manifestations.

Autopsy revealed a lymphatic leukemia, leukemic lymphoblastoma of the skin, spleen, lymph nodes, bone marrow and liver, together with a terminal lobular pneumonia.

CASE 2.—*History.*—H. L., a carpenter, aged 74, presented himself for examination at the University Hospital in May, 1924, complaining of severe itching and a generalized discoloration of the skin. He said that ten years before he had suffered from abdominal pain, appearing four hours after meals, which was relieved by taking soda or small amounts of food. This symptom lasted one year and recurred in 1923; for this reason an appendectomy was performed. Exploration of the abdominal cavity at this time did not reveal any other pathologic process. At about the same time, he noticed redness and itching over the upper part of the back. Soon the chest was similarly involved, and slowly, over a period of a year, the changes in the skin became universal.

Examination.—Examination showed a well nourished, well preserved man, of fair appearance, who presented a generalized, reddish-brown hyperpigmentation of the skin. Figure 3 is a photograph of the patient taken shortly after his admission to the hospital. The pigmentation was due in part to a mottled erythema which blanched on pressure, leaving a yellowish tinge to the skin. These changes were most marked over the abdomen where there was also a slight but distinct atrophy.

75. Keim, to be published in the Arch. Dermat. & Syph.

On close inspection the mottling appeared to be due to a fine capillary dilatation. To palpation the skin was soft and pliable, and nowhere except on the back were there nodules or areas of infiltration. Here there were a few large nodules the size of a pea which had been present since birth and histologically were found to be nevi. A striking feature was the generalized adenopathy, involving all the superficial lymph nodes, and which was especially marked in the inguinal region

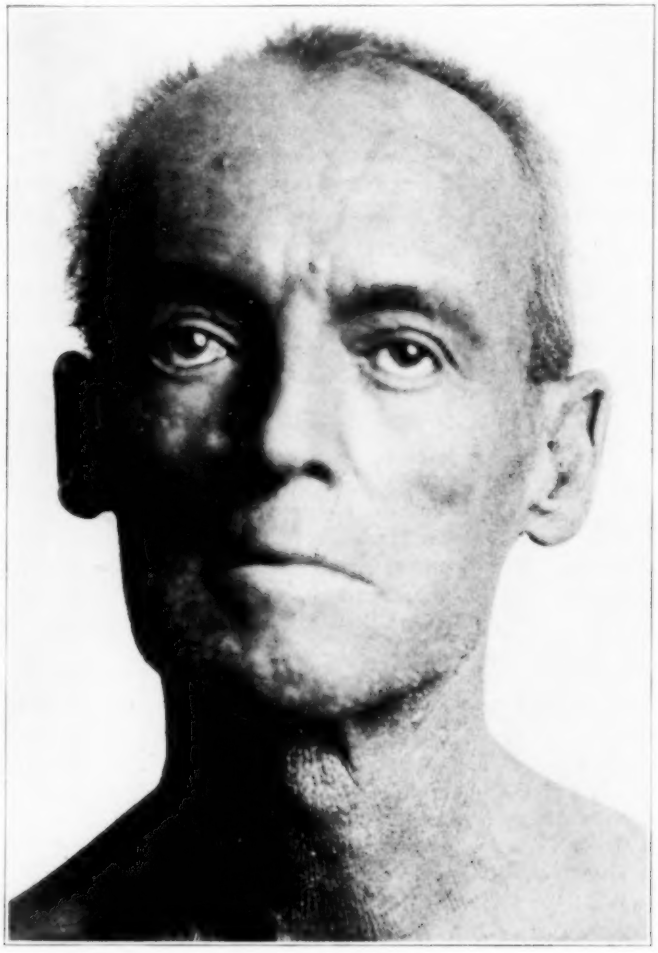

Fig. 1 (case 1).—Leukemic lymphoblastoma of the skin resembling the so-called pityriasis rubra of Hebra. The ectropion of the eyelids is well shown.

where they reached the size of large olives (fig. 3). Just to the right of the midline in the upper right quadrant was a 6 inch (15.2 cm.) linear scar. There was a slight generalized thinning of the hair, but no involvement of the nails. Abdominal palpation was difficult due to the rigidity of the muscles, but there was a suggestive tumor mass in the right upper quadrant.

Clinical Course.—Since the patient's first visit to the clinic, he has been under observation at irregular intervals up to the present time. Several x-ray examina-

tions and an abdominal operation failed to demonstrate any pathologic changes of the gastro-intestinal tract. During the first year there was little change in his condition, but in August, 1925, it was noted that the reddish-brown discoloration seen on entrance was gradually being replaced by a universal erythroderm with definite, fine, branny scaling. During the following year, the skin became noticeably infiltrated, and he presented the clinical picture of a universal exfoliative dermatitis. The next year, the most marked change occurred. He was seen in August,

Fig. 2.—Same patient as is shown in figure 1. Note the marked enlargement of the inguinal lymph nodes.

1927, and since that time has been continuously under observation. He now shows a universal scaly erythroderma with diffuse infiltration of the skin, as well as a dyskeratosis of the nails, a generalized thinning of the hair and an extensive hyperkeratosis of the palms and soles. The inguinal lymph glands have enlarged to the size of a small orange and the other palpable lymph glands are proportionately enlarged (fig. 4). In addition, he has suffered a considerable loss of weight and strength, and the itching has become progressively worse. The emaciation is well shown in figure 4. During the past four months, a striking change has occurred

in the appearance of the erythroderma, appearing as slowly developing areas of depigmentation which involve the back. Some of these areas have sharply defined borders, while in others the process merges gradually into surrounding hyperpigmented skin. This change may be seen in figure 5.

Repeated examinations of the blood during the first year were within normal limits, but in November of the following year examination showed a white blood cell count of 9,400 and a lymphocytosis of 41 per cent. Subsequent examinations of the blood revealed a variation in the number of white cells but a definite progressive increase in the percentage of lymphocytes. The highest count was recorded in December, 1927, when there was a leukocytosis of 50,000 with a lymphocytosis of

Fig. 3 (case 2).—Leukemic lymphoblastoma of the skin. The clinical picture in this case also bore a striking resemblance to the so-called pityriasis rubra of Hebra, showing the relatively good state of nutrition on entrance to the hospital in addition to the marked inguinal adenitis.

64 per cent. The last blood count, made in April of this year, showed 9,000 white cells, of which 80 per cent were lymphocytes.

The first biopsy, taken from the skin of the back in March, 1925, revealed little change in the epidermis. In the upper part of the corium, there was a perivascular lymphocytic infiltration. The most recent microscopic examination of the skin made in March, 1928, showed a moderate hyperplasia of the epidermis with a thickening of the rete pegs. Involving the subpapillary layer of the corium

Fig. 4 (case 2).—Same patient as in figure 3 about three years later, showing the marked emaciation and enlargement of the inguinal lymph nodes.

Fig. 5 (case 2).—Showing the depigmented areas on the back.

was a bandlike cellular infiltrate made up of lymphoblasts, young mononuclears and deeply staining mature lymphocytes. In addition, there were numerous plasma cells. The stroma consisted of a comparatively heavy, pale staining reticulum rich in fibroblasts.

Examination of the blood and the histologic investigation of the skin revealed the fact that this was a case of leukemic lymphoblastoma.

Professor Bloch of Zurich in a recent visit to the clinic in Ann Arbor pointed out the striking resemblance of this case to the so-called pityriasis rubra of Hebra.

CONCLUSIONS

1. A review of the literature shows that cases with similar clinical pictures but with diverse pathologic observations have been reported as pityriasis rubra of Hebra.

2. A careful analysis of the cases classified under this head enables one to separate them into groups.

3. The first of these undoubtedly represents the cutaneous manifestations of visceral and glandular tuberculosis.

4. A second and, in all probability, a larger group, includes the types of scaly erythroderma, which are placed in the group of the lymphoblastomas because of the observations of the blood and the postmortem changes. In this group are included leukemia, Hodgkin's disease, lymphosarcoma, and possibly the initial stage of granuloma fungoides.

5. A third group represents cases of exfoliative dermatitis which are as yet unclassifiable, owing to the lack of microscopic investigation and autopsy observation.

6. In view of these conclusions, there would seem to be considerable justification for dropping the name pityriasis rubra of Hebra and reclassifying these cases into their respective groups.

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DISCUSSION

DR. WILLIAM ALLEN PUSEY, Chicago: In general, I approve of all Dr. Barney's views on the subject. I have long been convinced of the great obscurity of the classification of exfoliative dermatitides. In many classifications there are two kinds of exfoliative dermatitis, one that lasts forever and is called Hebra's pityriasis rubra, and others in which the patient recovers and which are called by many names. This, of course, is not a good basis for classification. On looking over all of these diseases of the skin, I can find only one that is entitled to be regarded as a specific entity, and that is Devergie's disease. The other forms of exfoliative dermatitis are symptomatic manifestations of the various diseases. The case Dr. Barney showed on the screen is a replica of many of the cases known as Hebra's disease. Certainly it is a replica of a case in my own experience that I have clearly in mind. I think that the division Dr. Barney made is good. I have not had an opportunity to see so many cases associated with tuberculosis, but I can see by analogy how Sternberg's type of tuberculosis might readily lead to this condition of the skin. I think that on reviewing the literature of cases of Hebra's type one would become convinced that most of them represent the man-

ifestations of lymphoblastoma. In the other types there are various manifestations of several diseases of the skin—of psoriasis, for example—and of course when the cases are found to be exaggerated pictures of known skin diseases they should be called by their proper names. I see no reason to think that many of the cases could possibly be confused with pemphigus. I did have an experience with one case that illustrates a superficial resemblance. One evening I went to see a new patient of mine in a hospital where the facilities for careful examination were poor. The woman had an exfoliative dermatitis, and she had globular lesions on the skin that were so translucent that in the poor artificial light I assumed them at once to be due to pemphigus. I stuck a knife into one of these translucent tumors, and, to my amazement, it did not collapse. They were tumors of lymphoblastoma, associated with exfoliative dermatitis.

The logical attitude toward these exfoliative dermatoses would be to get away from these old type names. The old dermatitis of Erasmus Wilson was not an entity; it was an acute exfoliative dermatitis usually toxic scarlitiniform erythemia. I think that we should stop describing them as pityriasis rubra of Hebra, or general exfoliative dermatitis of Erasmus Wilson, and call them generalized exfoliative dermatitis, and try to establish the basis of important relations.

Dr. Hamilton Montgomery, Rochester, Minn.: When we have cases of exfoliative dermatitis in which the etiology is obscure, they should be carefully investigated and followed through, not only from the clinical standpoint, including differential blood count and x-ray of the chest, but also by repeated biopsies of the skin and even of the glands, over a period of years. At the Mayo Clinic, we have several cases, two of which I have in our scientific exhibit, which we are tentatively calling malignant erythroderma. These cases have all the characteristics that Dr. Barney's second case had in the beginning. The clinical, laboratory and pathologic observations do not give us a clue at present. Probably a year or two from now, we shall be able to say that they are cases of Hodgkin's disease or leukemia cutis or lymphosarcoma.

Dr. Robert E. Barney, Cleveland: I wish only to emphasize again the importance of investigating all chronic cases of exfoliative dermatitis by means of repeated examinations of the blood and repeated biopsies of the skin. The second case I described showed nothing typical of a leukemia when first observed, but it was unquestionably a leukamid. Later the case showed a typical picture of a leukemia cutis.

TINEA OF THE NAILS AS A SOURCE OF REINFECTION IN TINEA OF THE FEET

PRELIMINARY REPORT *

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Every one who has had much experience in the treatment of patients with tinea of the feet has been impressed with the irregularities observed during the course of the disease. Some patients are cured quickly and apparently stay cured; others are easily relieved, but the condition recurs year after year. In the attempt to explain these recurrences, emphasis is usually placed on imperfect sterilization of clothing and towels, and on reinfection from the floor of public bathing places. It is my belief that in many cases the explanation is much simpler. Within a month I have seen three cases of recurrent tinea of the feet, the diagnosis being confirmed by the microscope, in which organisms of the ringworm group were found in the toenails, after maceration, in from 20 to 30 per cent potash solution. The discovery was accidental and was made during the course of a series of examinations undertaken in the endeavor to learn something about the organisms to be found in the yellow and deformed toenails seen so often in dermatologic clinics. These nails usually yield a yeastlike organism in great abundance, but in the three cases already mentioned mycelial threads identical in appearance with those found in scales from the skin of the same patient were also found. One case was particularly instructive. The same fragment of nail tissue yielded mycelial threads, mycelial threads breaking up at one end into a few sporelike segments, mycelial threads divided into round, oval and short oblong segments, and many scattered round sporelike bodies. The septate mycelia did not resemble the chains of spores produced by *Aspergillus* and similar organisms, but when the round bodies occurred singly, or in groups of two or three only, it would be impossible to make a diagnosis.

I do not think any one in examining the nails in situ would make a diagnosis of tinea. They were slightly discolored, dull and had fine longitudinal striae, but there was nothing about them to attract attention. The only way to determine the presence of tinea infection in such nails is by careful microscopic examination or by culture. The former is

* Submitted for publication, Aug. 21, 1928.

difficult on account of the tendency of the mycelia, in these particular cases at least, to break up into round segments, which it is difficult or impossible to identify, while cultures are usually overgrown with yeasts and molds of various kinds.

Cultural experiments are under way, and I hope to report more fully on the whole subject at a later date.

THE BLOOD SUGAR LEVEL IN SOME OF THE COMMON SKIN DISORDERS*

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This communication is based on the blood sugar observations in 205 patients with skin manifestations. The dermatoses studied included acne vulgaris, various types of eczema and eczema seborrheicum, furunculosis, urticaria, erythema multiforme, pruritus and rosacea.

A review of the literature discloses an abundance of reports on hyperglycemia, but only a limited number dealing with disorders of the skin. The observations reported are rather conflicting, ranging from normal to extremely high sugar levels.

In 1913, Johnston [1] expressed the belief that eczema was not concerned with the metabolism of the carbohydrates or fats. In 1915, Pels [2] reported the blood sugar observations in fifty cases, including the following disorders: acne vulgaris, psoriasis, eczema of various types, urticaria, erythema multiforme, furunculosis, hyperhidrosis, dermatitis herpetiformis, alopecia areata, rosacea, ecthyma and pemphigus foliaceus. The variation in his observations ranged from 0.07 to 0.156 per cent of blood sugar, averaging 0.107 per cent. His report showed practically no increase above the normal blood sugar values, with a tendency, however, toward the higher limits in some of the dermatoses. He concluded that "since the dermatologic manifestations of diseased conditions are frequently dependent in part on internal conditions it is felt that further study of this problem may throw light on certain forms of dermatoses in which high sugar content will infer a probable alimentary hyperglycemia, the proper treatment of which may solve the all too frequent difficulty of the dermatologic therapy."

Highman, Schwartz and Mahnken [3] in 1916 reported a series of blood sugar determinations in a number of diseases of the skin. Their observations were divided into two groups: eighty-nine cases in which the sugar content was not increased and sixty cases in which hyperglycemia was markedly present, the dermatoses being acne, seborrhea and sycosis. Hyperglycemia was recorded in twenty-six; twenty-four

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* Read before the Experimental Medicine Section, Cleveland Academy of Medicine, Friday, March 9, 1928.

1. Johnston, J. C.: Speculations as to the Cause of Eczema, J. Cutan. Dis. **21**:7, 1913.

2. Pels, I. R.: The Sugar Content of the Blood in Certain Diseases of the Skin, J. A. M. A. **65**:2077 (Dec. 11) 1915.

3. Highman, Schwartz and Mahnken: The Sugar Content of the Blood in Various Diseases of the Skin, J. Cutan. Dis. **34**:159 (March) 1916.

were normal and ten were on the border line. In acne indurata, the sugar observations were invariably high. In 1921, Pick [4] reported an almost constant hyperglycemia in fifteen cases of psoriasis, with an average of 0.135 per cent, and a moderate hyperglycemia in furunculosis.

The most enthusiastic reports on hyperglycemia in conditions of the skin were published by McGlasson,[5] in 1923 and 1926. He reported an increase in the blood sugar observations in the majority of 158 patients who were examined in his dermatologic practice. The dermatoses studied were furunculosis, urticaria, pruritus and various forms of eczema. He did not make any examinations in cases of acne and seborrhea, stating that "these are conditions which we feel sure are generally associated with hyperglycemia."

Blood Sugar Level in 205 Cases

Normal Blood Sugar Readings, Folin-Wu Method, 0.08-0.120 Mg. per 100 Cc.

Diagnosis	No. of Cases	0.80 — 0.110	— 0.120	— 0.130	— 0.140	— 0.160	— 0.214
Acne	70	63	4	..	2	1	
Eczema, all forms, and eczema seb.	39	25	11	3			
Furunculosis	23	12	9	2			
Urticaria	17	15	2				
Psoriasis	13	11	1	1			
Pruritus	10	7	1	..	2		
Pruritus, genital	6	5	..	..	..	..	1
Pruritus, anal	9	4	5				
Erythema multiforme	8	5	3				
Drug eruptions	5	3	1	1			
Rosacea	5	2	1	1	1		
Total	205						

This series of examinations of the blood sugar covers a period of five years. In the table are reported the observations in 205 cases, including a number of the common conditions of the skin encountered in dermatologic practice.

The Folin-Wu method was used exclusively. The required amount of blood was obtained by venipuncture and then oxalated. To the blood was added, in turn, seven times its volume of water, one volume of 10 per cent sodium tungstate and one volume of two thirds normal sulphuric acid. The proteins which are thus precipitated are removed by filtration. Two cubic centimeters each of the filtrate and of standard sugar solutions containing 0.2 and 0.4 mg. of dextrose are placed in the special Folin sugar tubes, and to each tube is added 2 cc. of alkaline copper tartrate solution. The tubes are placed in boiling water and heated for six minutes and cooled in a cold water bath for two minutes. Folin-Wu's molybdate phosphates solution is added, which turns an intense blue in the presence of cuprous oxide. The contents of the tubes are diluted to 25 cc. The unknown

4. Pick, W.: Blood Sugar Estimation in Psoriasis, Furunculosis and Syphilis, Dermat. Wchnschr. **72**:297; abstr. Arch. Dermat. & Syph. **4**:834 (Dec.) 1921.

5. McGlasson, I. L.: Hyperglycemia as an Etiological Factor in Certain Dermatoses, Arch. Dermat. & Syph. **8**:665 (June) 1920; Hyperglycemia: Its Therapeutic Application in Certain Dermatoses, ibid. **13**:338 (March) 1926.

solution is compared colorimetrically with the standard the color intensity of which most nearly approximates its own. In normal[6] cases, the observations run between 0.080 and 0.120 mg. per hundred cubic centimeters of blood.

I had an unusual opportunity to study these cases carefully as a collaborator with a group of four internists. The same technician, using the same method, has been making chemical examinations of the blood for the group for the last five years. Comparing their observations with my own, I am safe in saying that the results obtained were reliable.

The dermatoses examined included: acne vulgaris, 70 cases; eczema, 39; furunculosis, 23; urticaria, 17; psoriasis, 13; general pruritus, 10; genital pruritus, 6; anal pruritus, 9; erythema multiforme, 8; drug eruptions, 5, and rosacea, 5 cases. According to some authorities, the normal amount of blood sugar ranges from 0.08 to 0.12 mg. per hundred cubic centimeters. Analyzing the results, I find only 3 of 70 cases of acne showing an increase in the blood sugar. Of 39 cases of eczema in which examinations were made, three showed a slight increase over the normal. Furunculosis, which is considered by many as associated with hyperglycemia, was found to be about normal in this series, as only 2 cases of 23 have showed a slight increase in the condition. In 17 cases of urticaria, the observations were normal. Of 13 cases of psoriasis, hyperglycemia was noted in only one patient. Two of the 10 cases of pruritus showed an increase in the blood sugar. In 6 cases of genital pruritus, the blood sugar observation in one case was 0.214 per cent. In 9 cases of anal pruritus, the blood sugar was within normal limits; in cases of rosacea, there was an increase in 2 of 5 patients examined.

COMMENT

It is generally known that certain dermatoses are associated with diabetes. Sherwell[7] ably enumerates the diseases of the skin found accompanying diabetes as follows: generalized xeroderma, which is quite common; eczematous manifestations occurring in any region of the skin, especially in the genital, anal and inguinal regions and on the flexor surfaces, and furuncular and carbuncular manifestations, which are frequent.

Dermatoses connected with hyperglycemia or prediabetic states are not so well known.

The patients examined for blood sugar showed marked examples of the various dermatoses reported in this series. The cases in which the blood sugar observations were normal need no comment. Perhaps a brief history of cases with hyperglycemia is pertinent.

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6. Gray, H.: Blood Sugar Standards, Part 1: Normal and Diabetic Persons, Arch. Int. Med. **31**:241 (Feb.) 1923.

7. Sherwell, LePine, R.: Diabetes Mellitus in Sajous: Analytic Cyclopedia of Practice of Medicine, ed. 8, Philadelphia, F. A. Davis Company, 1921, vol. 6, p. 37.

The three patients with acne vulgaris who had hyperglycemia were women. There was always an exacerbation during menstruation; otherwise the eruption was not severe.

The patient with a blood sugar observation of 0.214 was an obese woman, aged 30. The urine gave a 3 plus reaction for sugar. Pruritus vulvae was most distressing; the itching subsided, however, when the patient was placed on a diabetic diet. In two of five cases in which rosacea occurred there was an increase in the blood sugar. This series is too small to enable me to draw conclusions; however, it is safe to assume from the observations in acne vulgaris, seborrhea, furunculosis and psoriasis that hyperglycemia is not of great significance as an etiologic factor.

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HOT BATHS IN LATE SYPHILIS

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Recent experiments on animals have revived interest in the hot bath as a treatment for syphilis. The hot bath or sweatbox as a part of the armamentarium for the treatment of syphilis is not new. Joan de Vigo, in 1514, said, "If an eruption of pustules, scabs, ulcers and warty excrescences are scattered over the whole body, after proper evacuation let the patient enter the stove for a sweat-bath. . . . This he should take twice a week." Jean Almenar, in 1512, said that the patient should go into either the sweatbox or the hot bath the day after a purge. Jacob Catanus, in 1516, devoted chapter six of his book on the French disease to "The Treatment of the French Disease by Administration of Baths." Many of the early syphilologists mention the hot baths; of these, particular mention should be made of Lawrence Frisius, 1532, Benedict Victor, 1551, and of William Rondeletius,[1] 1560, who casually referred to the modification of the clinical course of syphilis by intercurrent tertian malaria as though it were common knowledge.

> So when we see any signs of the French disease in anyone, we ought to ask whether the above conditions obtained, or if they were afflicted with any other disease at that time, which could modify or retard the French disease, such as tertian ague, or other (fevers) which cause profuse perspiration. For if the body should be afflicted with such a disease and become chilled, then the French disease becomes latent.

Interest in the hot bath treatment of syphilis still obtains among the medical profession, as well as among the laity. Many hot mineral springs have become famous the world over as resorts for the treatment of syphilis. It is true that at none of these places is the treatment limited to the hot baths; ordinary treatment is carried out in conjunction with the baths.

Schamberg[2] observed the effect of heat on the motility of *Spirochaeta pallida* in cover-glass preparations, which led to his investigation of the effect of heat on spirochete within the animal body.

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1. Quare cum in aliquo aliquas notas morbi Gallici videmus, debemus interrogare, utrum illa supradicta egerint, an aliquo morbo correpti fuerint ab eo tempore, qui quidem potuerit immutare, et retardare morbum Gallicum, ut febre tertiana aut alia, in qua multi sudores erumpunt. Quod si morbus sit in habitu corporis, et refrigeretur, tunc latitans morbus erumpet.

2. Schamberg, J. F., and Rule, A. M.: Studies on the Therapeutic Effect of Fever in Experimental Rabbit Syphilis: The Thermal Death Point of Spirochaeta Pallida, Arch. Dermat. & Syph. **14**:3 (Sept.) 126.

After inoculating rabbits with *Spirochaeta pallida,* he immersed the animals up to their heads in water at 113 F., twenty minutes at a time for a series of days. He reported complete inhibition of the development of syphilis as a result of such baths. Rectal temperatures ranging from 105.8 to 107.8 F. were observed during the bath.

The idea has a fascinating appeal to the imagination. For no matter how deeply *Spirochaete pallida* would be embedded in a gumma, beyond the reach of ordinary medicaments, the heat would penetrate and reach it anywhere. Furthermore, it would matter little whether one were dealing with early or late syphilis, the effect of the heat would always be the same.

My clinical application of Schamberg's experiments was carried out in September and October, 1926. This investigation was made at the outpatient department of the College of Medical Evangelists, where almost exceptional facilities for carrying out such work exist. In my series, all patients were kept in the hot bath twenty minutes, entering the bath when the temperature of the water was about 105 F., following which the temperature was raised gradually to from 108 to 113 F. within five minutes. The last two minutes of the bath were devoted to reducing the temperature. An ice pack was not placed on the patient's head during the bath in order to obviate any possibility of modifying the temperature of any spirochetes that might be localized there. On completion of the bath series, the usual treatment was resumed. A summary of the baths given is shown in table 1.

REPORT OF CASES

CASE 1.—C. R., a woman, age 40, entered the dispensary on Aug. 19, 1925, complaining of headaches of two years' duration. These headaches were localized in the suboccipital region and were not worse at night. Examination revealed a mild aortitis. One year of the usual antisyphilitic treatment had not affected the headache. The Wassermann reaction of the blood was 4 plus at all times before the hot bath series. Tests of the spinal fluid were negative. After the first bath, the headache disappeared for the first time in two years and did not recur up to the last time she was seen. This patient was enthusiastic at first, moving her residence to be nearer the dispensary, but toward the last she became weak. The Wassermann reaction of the blood was not affected and was still 4 plus on April, 1927. During the baths, the patient had lost 3 pounds (1.4 Kg.).

CASE 2.—L. C., a colored widow, aged 51, in May, 1925, complained of an ulcer that would not heal on the point of the right elbow. The ulcer was of twenty months' duration. The Wassermann reaction of the blood was 4 plus. The ulcer healed promptly on institution of treatment, but the Wassermann reaction was still 4 plus at the beginning of the bath series, September, 1926, and also immediately afterward. This patient was never regular about treatment, and when last seen on Jan. 15, 1928, it was in response to a follow-up card. The Wassermann reaction of the blood was still 4 plus on her last visit, seventeen months after the bath series.

Case 3.—G. H., a woman, aged 44, entered the clinic on Aug. 23, 1926, complaining of numbness in the left arm and the right leg; a dull ache between the shoulders, extending around the sides to the front as though she were being squeezed; inability to tell where her feet were and inability to walk in the dark. All of the symptoms were of four months' duration. She had been married at 18, and had lived with her husband five years. At the age of 36, one year after their separation, he had dropped dead while at work. She married again at the age of 31, and had been separated from her second

Table 1.—*Summary of Hot Baths Given* *

Date	Mrs. C. R. Temperature of Bath	Mrs. C. R. Sublingual Temp.	Mrs. L. C. Temperature of Bath	Mrs. L. C. Sublingual Temp.	Mrs. G. H. Temperature of Bath	Mrs. G. H. Sublingual Temp.	Mrs. G. W. Temperature of Bath	Mrs. H. S. Temperature of Bath
9/20/26	...	...	113	104	...	...	...	...
9/21/26	110	104	...	...	108	101.4	...	...
9/22/26	113	104	112	104	108	102.4	...	...
9/23/26	...	...	112	104	108	101.8	...	...
9/24/26	112	105	...	...	108	101	...	...
9/25/26	112	105	112	104	108	101.8	...	...
9/26/26	112	105	112	104	108	101.2	...	...
9/27/26	...	104.8	112	104	108	102.2	...	...
9/28/26	112	105.4	112	104	108	101	...	...
9/29/26	112	104.8	112	104	108	101.4	...	...
9/30/26	112	105.4	112	104	108	102	...	...
10/ 4/26	112	104	...	...	...	...	...	...
10/11/26	112	104	...	...	...	...	110	...
10/12/26	...	...	...	...	...	...	110	...
10/13/26	...	...	...	...	...	...	110	110
10/14/26	...	...	...	...	...	...	110	110
10/15/26	...	...	...	...	...	...	...	110
10/16/26	...	...	...	...	...	...	...	110
10/17/26	...	...	...	...	...	...	110	110
10/18/26	...	...	...	...	...	...	...	110
10/19/26	...	...	...	...	...	...	110	110
10/20/26	...	...	...	...	...	...	...	110
10/21/26	...	...	...	...	...	...	110	110
10/22/26	...	...	...	...	...	...	...	110
10/23/26	...	...	...	...	...	...	...	110
10/24/26	110	...	...	...	...	...	...	...
10/25/26	...	...	...	...	...	...	...	110
10/28/26	110	...	...	...	...	...	...	...
10/30/26	110	...	...	...	...	...	...	...
10/31/26	110	...	...	...	...	...	...	...
11/ 2/26	110	...	...	...	...	...	...	...
Previous treatment: Number of injections of								
Mercuric salicylate	16		20		..		30	12
Bismuth salicylate	8		28		6		52	24
Neoarsphenamine	16		8		..		10	8
Arsphenamine	8		..		..		15	..
Silver arsphenamine	..		8		..		20	8
Date of last visit	April, 1927		Jan. 15, 1928		April, 1928		Apr., 1928	Apr., 1928

* Duration of all baths was twenty minutes.

husband eight years. The patient presented a tabetic gait and inability to stand when her eyes were closed. The deep reflexes were not elicited. The tuning fork was not felt to vibrate when held against the tibia. The blood pressure was 108 systolic and 62 diastolic. There was an accentuation of the aortic second sound, and also a systolic murmur at A_2 when she leaned forward. The Wassermann reaction of the blood and of the spinal fluid was 4 plus. Examination of the spinal fluid showed: a pressure of 130 mm., 250 cells, a 1 plus Noguchi test and a colloidal gold reading of 12343321. Her weight was 86 pounds (39 Kg.).

After two weeks of the use of iodides, she received six weekly injections of bismuth salicylate before the baths were taken. The patient became

extremely weak in the bath, so that it was deemed too risky to elevate the temperature of the water over 108 F. Two months after the baths she complained of precordial pain, which radiated down the left arm, and it became progressively more difficult for her to walk up an incline to her home. The systolic murmur disappeared from the region of the left border of the sternum, third interspace. The pulse rate was 114. A 2 meter x-ray plate showed a widening of the aorta. In January, 1927, she began to have shooting pains in the legs and behind the ears. On May 16, she reported that the numbness had completely disappeared from her left arm, but that she still had some tingling in the right leg. The girdle pain had entirely disappeared. She could walk without watching her feet, and she could walk in the dark. She could put on her dress over her head while standing (previously she had had to sit down to put on her dress).

After the patient had been receiving treatment for five months, she developed diplopia, which lasted five days, with ptosis of the left eyelid. She never entirely recovered from the ptosis. The Romberg reaction was still positive, the reflexes were still absent, and the Wassermann reaction of the blood was still 4 plus. By August 8, the left knee had become enlarged, and bent sideways when she walked. It was not painful. By December 19, the patient was having a severe relapse in spite of all treatment, which had been guarded on

TABLE 2.—*Differential Blood Pressure*

	May 9, 1927	June 13, 1927	Nov. 21, 1927	April 9, 1928
Right	164/46	174/108	150/100	150/ 96
Left	138/86	164/106	140/ 90	140/180

account of the cardiovascular condition. She had a recurrence of the pain between the shoulder blades and down the arms and of the girdle sensation, and again had to take a flashlight to bed with her. On Jan. 23, 1928, the Wassermann reaction of the blood was 4 plus; the ulnar side of the left arm and hand was analgesic, as was almost the entire skin of both legs. Her condition had not changed when she was last seen in May, 1928.

CASE 4.—G. W., a woman, aged 34, complained of deafness which had begun suddenly. She had consulted an otologist, who had ordered a Wassermann test made, which he had found to be 4 plus. The left pupil was larger, slightly irregular and more sluggish in reaction to light than the right. The Wassermann reaction of the blood became 1 plus following an exfoliative dermatitis resulting from ordinary treatment. It relapsed to 2 plus before the baths were begun. The reaction of the spinal fluid was also positive and showed a colloidal gold reading of 433321000 in August, 1925, and of 0123332100 in March, 1926; but all spinal tests were completely negative just twelve months after the baths. The Wassermann reaction of the blood was still 2 plus in April, 1928.

CASE 5.—H. S., a widow, aged 51, complained of precordial stress, exertion dyspnea, palpitation and headache. The aortic second sound was much accentuated. Murmur was not heard over the precordial area. The percussion outline of the right border of the heart was extended to the right. X-ray examination showed an aneurysm of the ascending aorta. The differential blood pressure is shown in table 2.

The Wassermann reaction of the blood was always 4 plus on examinations made from the first visit to May, 1928. The patient did not bear the baths well, although she did not lose weight. She complained of weakness for two weeks, which was gradually overcome. The precordial stress, exertion dyspnea, palpitation and headache disappeared later during the course of ordinary treatment. This patient said repeatedly that she thought the baths had been harmful.

Since the work herein reported was terminated, Frazier [3] has published his attempts to confirm Schamberg's experiments on the effect of the hot bath on rabbits with syphilis. He says:

In general, repeated bathing at temperatures from 107.6 F., resulting in elevations of body temperatures from 103.5 F. to 106.7 F., failed to have any effect on the clinical course of syphilis in the rabbit, if an exception is made of the short prolongation of the incubation period observed in the second experiment; while under similar conditions of time, bathing in 113.0 F. followed by body temperatures from 106.2 F. to 110.6 F., in a small series of animals, definitely inhibited the clinical progress of the disease, and in one case appeared to have eradicated the infection.

Frazier's experiments would indicate that temperatures which could be safely attained in the human being would have little value in the treatment of persons who had syphilis. Perhaps the rabbit's toleration of the higher temperature may be explained by its higher normal temperature, which ranges around 101 F.

Certain European authors have reported observations on the effect of heat on the spirochete outside the body that would seem to preclude the possibility of one's being able to effect any injury to the spirochete as a parasite by any treatment with heat. Arnheim [4] reported that cultures of *Spirochaeta pallida* resist a temperature of 60 C. for five minutes. Zettnow [5] reported similar figures, and Edmund Hoffmann [6] reported that heating the culture tube to 60 C. for twenty minutes killed all spirochetes, but that motility was still present after heating to 50 C. for twenty minutes.

CONCLUSION

Although, in their own opinion, the patients felt an initial subjective improvement, it was soon apparent that the hot bath was exhausting, so much so, in fact, that I hesitated to extend the work further until the effect on the first five patients could be studied more completely.

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3. Frazier, C. N.: Effect of Elevation of Body Temperature on the Course of Experimental Syphilis in the Rabbit, Arch. Dermat. & Syph. **16**:445 (Oct.) 1927.

4. Arnheim, cited by Hoffmann, E.: Morphologie und Biologie der Spirochaeta Pallida Experimentelle Syphilis, Berlin, Julius Springer, 1927, p. 42.

5. Zettnow, cited by Hoffmann and Hofman (footnote 4).

6. Hoffmann, Edmund: Morphologie und Biologie der Spirochaeta Pallida, Experimentelle Syphilis.

Subsequent observation failed to reveal any clinical or laboratory evidence that the heat exterminated or appreciably vitiated spirochetes in any of the patients studied. In this connection, I am reminded of an observation published by Nicholas Massa [7] in 1563.

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7. Non ingrata hic cadit speculatio, videlicet, an balnea thermarum vel artificialia in ista cura sanent istam aegritudinem, vel aliquid conferant. Cui dubio respondeo imprimis, quod experentia saepe hoc nobis notum fecit, paucos, aut nullum ex toto per assumptionem aquarum thermarum, aut per lavacrum, sanitatem recepisse, quod si aliqui per alicuius temporis spatium, a balneis sanati visi sunt, non tamen diu permanserunt, sed de novo in eandem aegritudinem, et etiam aliquando deteriorem devenerunt, . . . quare dico, quod istae virtutes in thermis non sunt multum activae, . . . deinde sua calididate debili, . . . et sic causant novam aegritudinem deteriorem prima. Hoc idem dico de artificiali.

It is not unprofitable to consider whether or not hot or artificial baths are of any assistance in or contribute anything toward the treatment of this disease. Regarding this question I may say that experience has shown that few or none have been cured either by imbibing or bathing in hot waters. Such benefit as seemed to be attributable to the baths is never permanent, but is followed by relapses (case 3). For this reason I say there is not much virtue in the heat alone . . . which is weakening . . . and which may even induce a new exacerbation of the disease. What I say holds good for the artificial bath as well.

SEROLOGIC DISCORD IN LATENT AND TREATED SYPHILIS*

REPORT OF CASES*

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Reports of comparative tests of various serologic procedures applied to identical specimens of serum are already abundant in the literature on syphilis. Opinion concerning the significance of such comparisons in regard to the choice of technical method is by no means unanimous. In fact, one gains the impression that more helpful results are obtained by complement-fixation at the hands of some workers, while for others, precipitation or the precise measurement of flocculation appears more useful. The identification of each technical procedure by the name of an individual investigator is apparently unavoidable, but this lends a personal quality to the rivalry of these various methods in their claim on the attention of the clinician. At present, for the most satisfactory results, the serum of the patient should be examined by several methods. When this is not practicable, the choice of procedure is often determined by the relative cost and availability of materials and equipment. The precipitation test is in an especially fortunate position in this respect, because of its economy and its easy application on shipboard or in tropical climates. Complement-fixation, as the more classic procedure, is not to be discarded, for the enormous experience in its use affords an excellent background for the interpretation of new results. Its application, however, is relatively expensive in materials and labor and requires highly trained skill. The flocculation test is more precisely controlled than either, but this mechanical control requires somewhat elaborate apparatus, too expensive for the casual worker. The matter of the expense of equipment is of relatively little moment when many specimens are to be examined, and when the volume of work is large the flocculation test becomes relatively economical. While these factors of convenience and economy will frequently determine the choice of procedure, it is nevertheless important to continue to accumulate com-

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parative data regarding the results of the various methods and the significance of these results in relation to the patient. When discordant, they especially challenge investigation.

In the present study, the same specimen of blood serum was divided into three portions, and these portions were tested by different persons in the same laboratory; the Wassermann complement-fixation test, the Kline modification of the Kahn precipitation test and the Vernes flocculation test were used. For the Wassermann test two antigens were employed, the antigen of Kolmer and the cholesterolized alcoholic extract of beef heart, designated as B.H.C. The patient's serum was used in quantities of 0.02 and 0.05 cc. with each antigen, with 0.10 cc. serum in the control tube. In the Kline-Kahn test and in the Vernes flocculation test, the technic of the respective authors was followed precisely. The number of specimens in the series was 153.

One hundred and four of these specimens gave negative readings in the complement-fixation test with both antigens, negative readings in the precipitation test and readings below 5 in the flocculation test. Among these serologically negative specimens, eight were from persons with a positive clinical diagnosis of syphilis. These are listed in table 1.

REPORT OF CASES

CASE 1.—A woman, born about 1862, came to the clinic June 23, 1925, because of a varicose ulcer on the foot. She had been treated for syphilis in 1917, 1918 and 1919, having had nine injections of arsphenamine and 120 injections of mercury. Subsequently, on Jan. 23 and Nov. 24, 1925, and on April 13 and Oct. 26, 1926, the blood had given negative Wassermann reactions. The last specimen also gave a negative Kline-Kahn reading and a Vernes reading of 2. The serologic results indicate inactivity of the syphilitic process.

CASE 2.—A colored woman, born about 1878, was admitted to the clinic Oct. 25, 1926, with respiratory distress of cardiac origin. Aortic valvular disease and aneurysm were recognized. There had been five stillbirths and three living children born to her. Antisyphilic treatment did not appear in the clinical record. The specimen of blood the results of which are recorded in table 1 was taken Dec. 10, 1926.

CASE 3.—A white man, born in 1889, was admitted to the clinic July 26, 1926, with chancre, preputial edema, general maculopapular eruption and general adenopathy. The Wassermann reaction of the blood was 4 plus. Treatment with eight injections of arsphenamine and with mercury, from August 4 to November 10, preceded the taking of a specimen of blood November 12. The results of the examination are recorded in table 1.

CASE 4.—A white woman, born in 1893, came to the clinic in 1917, presenting an eruption of secondary syphilis with a positive Wassermann reaction. She had received four injections of arsphenamine and twelve injections of mercury in 1917, but had not had antisyphilitic treatment since that time. In 1921, the test of the blood was negative. The Wassermann test had been negative on Feb. 7 and 16, 1924, on Oct. 29, 1925, and on Nov. 18, 1926; the results for the last specimen of blood are recorded in table 1.

CASE 5.—A white man, born in 1889, had had a venereal sore in 1910. He had received one injection of arsphenamine and four injections of mercury at that time. He had been married in 1913 and has five healthy children. On July 13, 1926, he was admitted to the clinic and, according to the record, showed "symptoms of specific transverse myelitis." The Wassermann reaction on this date was negative. He received eight injections of arsphenamine and ten injections of mercury from July 13 to October 21. The results for the specimen of blood taken on November 18 are recorded in table 1. The diagnosis of syphilis appears insecure in this case.

CASE 6.—A white man, born in 1895, had had a venereal sore in 1925. He had received six injections of arsphenamine and twelve injections of mercury, the last about Aug. 15, 1926. The observations on the specimen of blood, taken November 22, are recorded in table 1. At this time symptoms were not present.

CASE 7.—A white woman, born in 1888 and married, was admitted to the clinic July 30, 1924, with indefinite nervous symptoms. Her husband was under treatment for tabes dorsalis at the same time. She had one syphilitic child,

TABLE 1.—*Observations on Eight Specimens from Syphilitic Patients with Essentially Negative Serologic Results*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
1	2	—	—	—	—	—	Tertiary syphilis
2	4	—	—	—	—	—	Aortic aneurysm
3	2	—	—	—	—	—	Treated secondary
4	0	—	—	—	—	—	Treated syphilis
5	0	—	—	—	—	—	Transverse myelitis
6	1	—	—	—	—	—	Treated syphilis
7	2	—	—	—	—	±	Cerebrospinal syphilis
8	1	—	—	—	—	—	Treated tertiary

born about 1912. On April 29, 1925, the blood gave a plus-minus reading with Kolmer antigen and a 2 plus reading with cholesterolized beef heart. Between Feb. 15, 1926, and May 2, 1927, the patient received four courses of treatment with arsphenamine and with mercury. Observations on the specimen of blood, taken March 23, 1927, are recorded in table 1.

CASE 8.—A white woman, born in 1876 and married, had been treated for syphilis in 1920 and 1921. She had returned in 1927 on account of a slight dermatitis. The results for the specimen of blood taken Nov. 6, 1926, are recorded in table 1.

Six of these eight patients may be accepted as definitely syphilitic, in relatively inactive stages of the disease. Two patients, 2 and 5, appear also to have contracted the disease, but their histories are not conclusive.

In a series of patients not considered syphilitic there were five specimens in which the result of one serologic test suggested the possibility of syphilitic infection. These observations are listed in table 2 and are included in the chart. They will not be individually discussed because record of adequate study is lacking.

There were seven specimens which gave significantly positive readings by only one serologic method. The results are briefly presented in table 3.

CASE 9.—A white woman, born in 1876 and married, was admitted to the clinic Nov. 30, 1925; the pupils of the eyes were fixed and the knee reflexes were absent. She had been treated for syphilis previous to admission. Injections of arsphenamine were begun December 7. The specimen of blood obtained Feb. 16, 1926, gave the results shown in table 3.

CASE 10.—A white woman, born in 1898 and married, was admitted to the gynecological clinic Nov. 13, 1926. The specimen of blood taken November 18 gave the serologic results shown in table 3. Careful search has failed to reveal any further recorded information.

TABLE 2.—*Results for Five Specimens of Blood from Patients not Considered Syphilitic, Showing Slightly Suggestive Readings by One Serologic Method*

Vernes Reading	Wassermann				Kline-Kahn	Comment
	B. H. C.		Kolmer			
8	—	—	—	—	—	No history
5	—	—	—	—	—	Leukemia
2	—	—	—	—	2	Healthy donor
10	—	—	—	—	±	Neurologic case
6	—	—	—	—	—	Pruritus

TABLE 3.—*Results for Seven Specimens of Blood with Significantly Positive Serologic Reading by only One Method*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
9	3	—	+	—	—	++	Neurosyphilis
10	6	—	—	—	—	++++	No history
11	5	—	—	—	—	+++	Aortitis (syphilitic ?)
12	2	±	++++	—	—	++++	Neurosyphilis
13	22	—	—	—	—	±	Angina pectoris
14	15	—	—	—	—	—	Treated secondary
15	14	—	—	—	—	—	Primary, seven days

CASE 11.—A white man, born in 1893 and married, was admitted to the clinic March 9, 1927; he had come because he had been refused life insurance on account of a cardiac defect. He has had two children, one of them now dead. He gave a history of orchitis in 1915, and of gonorrhea; the date was not recorded. A history of rheumatism or of chancre could not be obtained. Physical examination revealed a huge heart, extending 14 cm. to the left in the sixth interspace. Aortic stenosis and insufficiency were recognized. The Wassermann test on March 9 was negative and was also persistently negative on April 12, June 11 and August 16. The Vernes reading was 5 on April 4; 4 on April 11 and 9 on June 11. The precipitation test March 9 was 2 plus; on April 4, 3 plus and on April 11, negative. The patient was treated with potassium iodide beginning March 14, and with arsphenamine and bismuth, beginning July 6. The results of the tests made April 4 are shown in table 3. The syphilitic nature of the aortic disease at the age of 34 would appear somewhat uncertain in this case.

CASE 12.—A white man, born in 1886 and married, was admitted to the clinic on July 11, 1919, complaining of nervousness and insomnia. The Wassermann

test at that time gave a reading of 1 plus. He was treated with arsphenamine and mercury. The Wassermann reaction became negative in June, 1922. On Sept. 18, 1925, a specimen of spinal fluid gave a negative Wassermann reaction and a colloidal gold reading of 1122200000. On March 3, 1926, the Wassermann reaction of the blood became full 4 plus, with both antigens used. Intensive treatment with arsphenamine and mercury were given from March 5, 1926, to March 23, 1927. The specimen of blood taken Nov. 5, 1926, gave the results recorded in table 3. Subsequently, April 20, 1927, a month after the cessation of treatment, the blood gave a Vernes reading of 71, the Wassermann reaction was entirely negative and the Kline-Kahn reading was 4 plus. The results for the latter specimen are recorded in table 4.

CASE 13.—A white woman, born in 1887 and married, was admitted to the clinic April 4, 1927, complaining of precordial distress. A letter from her physician requested antisyphilitic treatment on account of a 4 plus Wassermann reaction and a tachycardia. The Wassermann reactions of the blood on April 6 and April 11 gave negative results. The specimen taken on April 11 gave a Vernes

TABLE 4.—*Observations on Eight Specimens with Discordant Serologic Results, Including a Significantly High Vernes Reading*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
16	10	++++	++++	++	++++	—	Tertiary syphilis
17	30	++++	++++	++++	++++	—	Early secondary
18	10	++	++++	+	++++	—	Cerebrospinal syphilis
19	22	—	—	—	—	++++	Cerebrospinal syphilis
20	20	—	+++	—	—	++++	Congenital syphilis
12	71	—	—	—	—	++++	Neurosyphilis
21	30	++++	++++	++++	++++	—	Tertiary syphilis
22	52	++++	++++	++++	++++	—	Tertiary syphilis

reading of 22 and a Kline-Kahn reading of plus-minus. The diagnosis of syphilis in this case appears somewhat questionable.

CASE 14.—A white man, born in 1903, was admitted March 20, 1926, with a chancre and a secondary eruption over the trunk and arms. The Wassermann reaction of the blood gave a 4 plus reading. After intensive treatment with arsphenamine and mercury, the specimen of blood, taken April 12, 1927, gave the results shown in table 3.

Case 15.—A white woman, born in 1908 and married, was admitted to the clinic March 20, 1928, with genital ulcers of one week's duration, in which *Spirochaeta pallida* was recognized by dark-field examination. A specimen of blood obtained March 21 gave the results record in table 3.

There were eight specimens which gave discordant serologic results including a significantly high Vernes reading. These are recorded in table 4.

CASE 16.—A white woman, born in 1867 and married, was admitted May 29, 1922, because of nervousness, a fluttering sensation around the heart and a 4 plus Wassermann reaction. During the next five years she received seventy-two injections of arsphenamine and eighty-one injections of mercury. The 4 plus Wassermann reaction persisted on repeated tests until Nov. 18, 1926,

when, for the first time, there was incomplete fixation in the first tube with the Kolmer antigen. The readings on the specimen of blood are shown in table 4.

CASE 17.—A white man, born in 1906, was admitted Nov. 11, 1926, with a typical chancre of two weeks' duration and a beginning general eruption. The specimen of the blood taken November 18 gave the results shown in table 4. The negative precipitation result is remarkable.

CASE 18.—A white woman, born in 1886 and married, was admitted June 24, 1926, complaining of persistent headache and cracking sounds in the head. The right pupil was sluggish, and the Wassermann reaction of the blood was 4 plus. A history of neither primary syphilis nor secondary syphilis could be obtained. From June to November 4, the patient received eight injections of arsphenamine and ten of mercury. A specimen of blood taken November 18 gave the results shown in table 4.

CASE 19.—A white woman, born in 1889 and married, was admitted Feb. 26, 1924. She had been under treatment for syphilis at another hospital since 1912 and had received some arsphenamine there. The patellar reflexes were decreased, and the vision in the right eye was reduced to light perception. The specimen of blood, taken March 1, 1924, gave a 3 plus fixation in the second tube, with the Kolmer antigen. Somewhat similar partial fixation of complement was observed from time to time during the course of treatment extending over the next three years. A specimen of blood, taken on April 1, 1927, gave the results shown in table 4.

CASE 20.—A colored girl, born Sept. 2, 1926, was admitted March 17, 1927, with acute respiratory disease engrafted on a chronic rhinitis. Bronchopneumonia, otitis media and mastoiditis with operation followed. A specimen of blood obtained April 9, 1927, gave the results shown in table 4. Blood was obtained from the child's father April 13, 1927, and this gave a Wassermann reaction of 4 plus in all tubes, a Vernes reaction of 56 and a Kline-Kahn reaction of 4 plus.

CASE 21.—A white man, born in 1904, was admitted Nov. 11, 1926, with a suppurating inguinal lymph node. He acknowledged a gonorrheal infection in May, 1925, but denied signs of syphilis. The Wassermann reaction of the blood on November 11 was 4 plus in all tubes; the Vernes reading was 30 and the Kline-Kahn reading was negative, as shown in table 4.

CASE 22.—A white man, born in 1883, was admitted Dec. 27, 1924, for treatment. He had previously received fifteen injections of arsphenamine, but additional history was not available. Specimens of blood, taken Jan. 7, 1925, and Jan. 22, 1926, gave entirely negative Wassermann readings; however, a specimen of blood taken December 29, two years after his first admission, gave the readings shown in table 4.

In case 12, the specimen of blood gave a high Vernes reading, and the results are included in table 4.

Serologic results such as those shown in table 4 illustrate the fallacy of relying on a single laboratory test for syphilis.

In table 5 are recorded the observations on seven specimens with discordant serologic results, including a low Vernes reading.

CASE 23.—A white man, born in 1887, was admitted July 17, 1926, with a presystolic murmur of the heart and some swelling of the feet. He had a

chancre in 1911, and had received antisyphilitic treatment elsewhere. A specimen of blood obtained Nov. 13, 1926, gave the readings shown in table 5.

Case 24.—A white man, born in 1891 and married, was admitted July 17, 1924, with sores in the nose and with enlarged cervical lymph nodes. The Wassermann reaction of the blood was 4 plus, and he acknowledged having had a chancre seven years previous to admission. From July, 1924, to March, 1927, he received seven full courses of treatment, consisting of fifty-six injections of arsphenamine and seventy of mercury. A specimen of blood taken Dec. 20, 1926, gave the results shown in table 5. A specimen of blood taken April 12, 1927, gave results identical with the readings on the specimen of Dec. 20, 1926. It is remarkable that these readings, one month after termination of intensive treatment for nearly three years, should be the same as readings obtained about four months earlier. Such a case illustrates the stubborn resistance to treatment with arsphenamine and mercury often seen in cases of old syphilis.

Case 25.—A white woman, born in 1888 and married, was admitted Jan. 12, 1926, because of the recognition of syphilis in her husband. After four courses of treatment with arsphenamine and mercury, the specimen of blood, taken November 27, gave the results shown in table 5.

Table 5.—*Observations on Seven Specimens Showing Discordant Serologic Results, Including a Relatively Low Vernes Reading*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
23	0	++	++++	—	+++	++++	Tertiary syphilis
24	0	—	+++	—	++	+++	Tertiary syphilis
25	0	+++	++++	++	++++	++++	Tertiary syphilis
26	4	±	++++	—	—	+	Congenital syphilis
27	7	++++	++++	+	++++	—	Tertiary syphilis
28	0	±	+++	—	±	+++	Cerebrospinal syphilis

Case 26.—A white girl, born in 1910, was admitted May 17, 1923, apparently because syphilis had been detected in her father. The Wassermann reaction of the blood on admission was 4 plus. She received three courses of antisyphilitic treatment from 1923 to 1927. On March 29, 1927, the specimen of blood gave the readings shown in table 5.

Case 27.—A colored man, born in 1899, was admitted Nov. 6, 1926, complaining of abdominal distress made worse by eating and by soda. A specimen of blood taken on admission gave the readings shown in table 5.

Case 28.—A white man, born in 1883, was admitted Dec. 23, 1927, because of obscure deafness. The pupil of the left eye was somewhat sluggish in reaction to light. The specimen of blood taken December 30 gave the readings shown in table 5.

In table 6 are listed the observations made on seven specimens with positive serologic results, including a Vernes reading below 11.

Case 29.—A white man, born in 1895, was admitted Nov. 15, 1926, with a history of a Wassermann reaction of 4 plus. A specimen of blood taken November 20 gave the readings shown in table 6.

Case 30.—A white man, born in 1897, was admitted Nov. 19, 1926, with a history of syphilis of eleven years' duration. He had been treated in this clinic

in 1923, and the tests of the blood had been negative since then. A new specimen of blood, taken Nov. 24, 1927, gave the reading shown in table 6.

CASE 31.—A divorced woman, more than 30 years of age, was admitted March 29, 1927. The Wassermann reaction of the blood had been positive twelve years previous to admission, and she had been treated until it became negative. For the last eighteen months she had had vague symptoms. The specimen of blood taken April 1, 1927 gave the readings shown in table 6.

CASE 32.—A white man, born in 1903, was admitted Feb. 15, 1927, with a generalized maculopapular eruption of one week's duration and a venereal sore of two months' duration. A specimen of blood taken on admission gave the readings shown in table 6. A higher Vernes reading and a 4 plus precipitation reading might have been expected in this specimen.

CASE 33.—A white woman, born in 1896 and married, was admitted April 5, 1927, with nervous symptoms of premature menopause following operation on the pelvis. The specimen of blood taken April 9 gave the readings shown in table 6.

TABLE 6.—*Observations on Seven Specimens with Positive Serologic Results with Vernes Reading Below 11*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
29	7	++++	++++	++	++++	+++	Tertiary syphilis
30	8	++++	++++	++	++++	++++	Tertiary syphilis
31	9	—	++++	—	+++	++++	Neurosyphilis
32	10	++++	++++	++++	++++	+++	Secondary, seven days
33	5	++++	++++	+	++++	++++	Tertiary syphilis
34	9	+	++++	—	+++	+++	Tertiary syphilis
35	5	++++	++++	++++	++++	++++	Tertiary syphilis

CASE 34.—A colored woman, born in 1894 and married, was admitted April 28, 1926, with a large uterine fibroid and with anemia from excessive hemorrhage. Her husband was under treatment for syphilis at the same time. The patient was given intensive antisyphilitic treatment. On April 11, 1927, the specimen of blood gave the readings shown in table 6.

CASE 35.—A white man, born in 1857, was admitted Nov. 7, 1926, presenting signs of serious cardiac decompensation. A specimen of the blood taken November 10 gave the readings shown in table 6.

Table 7 shows the results on seven positive specimens for which the Vernes readings were above 10 and below 22.

CASE 36.—A colored woman, born in 1898 and a widow, was admitted to the hospital March 21, 1927. A specimen of blood taken March 23 gave the readings shown in table 7. The slight precipitation in the Kline-Kahn test is remarkable in connection with the other serologic readings.

CASE 37.—A white girl, aged 10, was admitted March 6, 1924. Her mother and sister had syphilis, and the patient apparently had the disease at birth. The Wassermann reading was 4 plus on admission. After treatment for three years, during which fifty-seven injections of sulpharsphenamine were given, a specimen of blood, taken April 9, 1927, gave the readings shown in table 7.

Case 38.—A white woman, born in 1889, was admitted Aug. 1, 1925, for antisyphilitic treatment. The history was not available. She received injections of arsphenamine and mercury for the next two years. A specimen of blood taken April 7, 1927, gave the readings shown in table 7.

Case 39.—A white, married woman, born in 1883, was admitted Nov. 22, 1921, because of deafness. Her husband had had a chancre in 1910 and has been under treatment for syphilis in this clinic. The patient had a 4 plus Wassermann reaction on admission. After she had been treated nearly four years, a specimen of blood, taken April 9, 1927, gave the readings shown in table 7.

Case 40.—A white man, born in 1872, was admitted April 6, having fallen unconscious three hours before. He had gradually regained consciousness after half an hour. There was a history of old neurosyphilis with previous treatment in this clinic, from June to November, 1925. A specimen of blood taken April 8, 1927, gave the readings shown in table 7. On April 12, a specimen of spinal fluid showed a 4 plus Wassermann reading and a colloidal gold reading of 1223321000.

Case 41.—A white, married woman, born in 1873, was admitted March 27, 1927, with paresis of one hand and one foot. She had had a positive Wasser-

Table 7.—*Observations on Seven Specimens with Positive Serologic Results, with Vernes Reading Above 10 and Below 22*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
36	19	++++	++++	++++	++++	+	Tertiary syphilis
37	17	++	++++	±	++++	++++	Congenital syphilis
38	21	++++	++++	±	++++	++++	Tertiary syphilis
39	13	++++	++++	±	++++	++++	Neurosyphilis
40	14	++	++++	—	++	+++	Cerebrospinal syphilis
41	20	±	+	—	++++	+++	Tertiary syphilis
42	19	+	++++	—	+++	++++	Tertiary syphilis

mann reaction of the blood in 1923, and had received antisyphilitic treatment for three years. A specimen of blood taken March 27, 1927, gave the readings shown in table 7.

Case 42.—A white man, born in 1898, was admitted April 12, 1927, and the specimen of blood on that date gave the serologic results shown in table 7. The recorded history consisted of "syphilis III."

Table 8 shows the serologic readings on six positive specimens with Vernes readings above 21.

Case 43.—A white man, aged 22, had a typical chancre and a general papular eruption with general adenopathy when the specimen of blood was taken.

Case 44.—A white woman, aged 18, showed a fading macular eruption when the specimen of blood was taken.

Case 45.—A white woman, born in 1898, was admitted Dec. 26, 1924. The Wassermann reaction of the blood was 4 plus. She received injections of arsphenamine and mercury from Dec. 31, 1924, to March 29, 1926. A specimen of blood obtained April 8, 1927, gave the readings shown in table 8.

Case 46.—A white man, born in 1887, had a chancre in 1911 and received forty-five injections of arsphenamine and twenty of mercury. The specimen of

blood taken April 13, 1926, gave the readings shown in table 8. Subsequently, in May, 1926, a specimen of spinal fluid gave a 4 plus Wassermann reading.

CASE 47.— A colored man, the father of the patient in case 20 with congenital syphilis, was tested April 13, 1927; the specimen of blood gave the readings shown in table 8.

CASE 48.—A white woman, born in 1905, was admitted April 19, 1927. She had moist papules in the perineal region. A specimen of blood taken April 19 gave the readings shown in table 8.

On the chart, each specimen is represented by a circle located according to the Wassermann test, reading from left to right: negative, anticomplementary, plus-minus, 1, 2, 3 and 4 plus, and located in the vertical direction according to the Vernes figure in a range from —0.09 to +0.71. The Kline-Kahn reading on the same specimen is indicated by the figure included within the circle, indicating negative, plus-minus, 1, 2, 3 or 4 plus. To save space, many specimens with negative

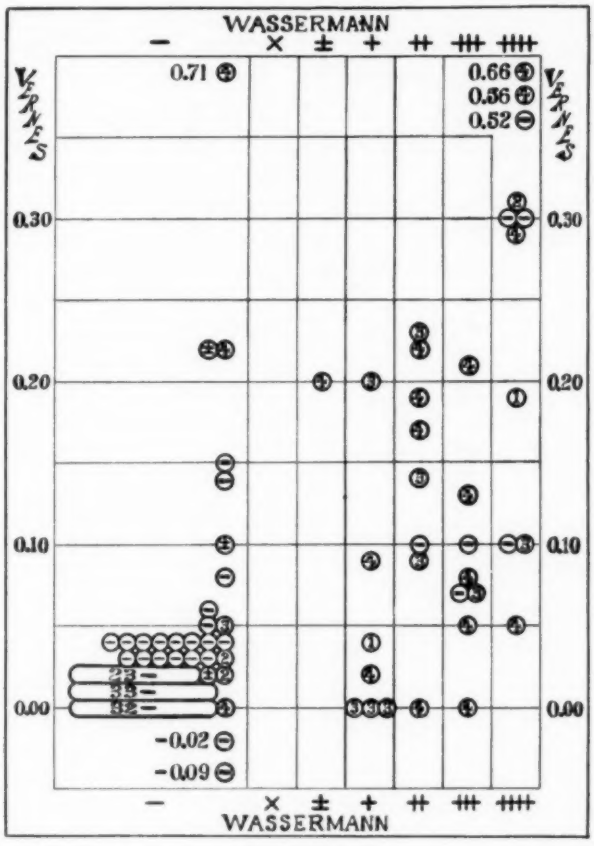
TABLE 8.—*Observations on Six Specimens with Positive Serologic Results, with Vernes Reading Above 21*

Case	Vernes Reading	Wassermann				Kline-Kahn	Comment
		B. H. C.		Kolmer			
43	29	++++	++++	++++	++++	++++	Secondary syphilis
44	66	++++	++++	++++	++++	++++	Secondary syphilis
45	23	+	++++	±	++++	+++	Tertiary syphilis
46	31	++++	++++	++++	++++	++	Tabes
47	56	++++	++++	++++	++++	++++	Tertiary syphilis
48	22	++	++++	+	++++	++++	Secondary syphilis

Wassermann readings and Kline-Kahn readings and Vernes figures below 3 have been grouped together, the number of these being indicated by the included figures 23, 33 and 32, respectively. For the same reason, a few specimens with high readings or with unusually low Vernes readings have been placed within the range of the table, and the Vernes reading has been recorded in figures alongside the circle.

This chart shows the essential lack of correlation between the results obtained by the three serologic methods on identical specimens. One recognizes at once fairly good agreement in regard to the nonsyphilitic patients. One hundred and eight of 118 specimens with negative Wassermann readings gave Vernes readings below 5, while only ten gave readings of 5 or above. Nine of the same 118 specimens gave some precipitation in the Kline-Kahn test, ranging from plus-minus to 4 plus, while 109 were negative. There were 115 specimens with a Vernes reading below 5. The Wassermann reading was negative in 108 of these, 1 plus in five, 2 plus in one and 3 plus in one. The Kline-Kahn reading was negative in 104 of the same specimens and gave some precipitation in eleven of these. There were 116 specimens

entirely negative in the Kline-Kahn test. Of these, there were 109 with a negative Wassermann reading, one with a 2 plus reading, two with a 3 plus reading and four with a 4 plus Wassermann reading. Of these same 116 specimens with the Kline-Kahn reading negative, there were 104 with Vernes readings below 5. The other twelve gave Vernes readings as follows: 5, 6, 7, 8, 10, 10, 10, 14, 15, 30, 30 and 52. The dis-



Each circle on the chart represents a specimen of blood serum, located in the vertical direction according to the Vernes reading and in the horizontal direction according to the Wassermann reading. The Kline-Kahn reading is indicated by the figure or sign included within the respective circle.

cord is therefore evident in only about 10 per cent in these groups which consist largely of specimens from nonsyphilitic patients. A somewhat different correlation becomes evident, however, when the specimens from syphilitic patients are considered.

There were eleven specimens giving 4 plus Wassermann readings. On these the Vernes readings were: 5, 10, 10, 19, 29, 30, 30, 31, 52,

56 and 66. The Kline-Kahn readings on the same eleven were: 4, 0, 3, 1, 4, 0, 0, 2, 0, 4, 4, four of the eleven being entirely negative and only four 4 plus in the precipitation test. There were nineteen specimens giving a Vernes reading of 15 or more. The Wassermann reading was negative in four of these nineteen specimens, plus-minus in one, 1 plus in one, 2 plus in four, 3 plus in one and 4 plus in only eight. On the same nineteen specimens, the Kline-Kahn readings were negative in four and 4 plus in only ten. The other five were as follows: plus-minus one, 1 plus one, 2 plus one and 3 plus two. There were nineteen specimens with a Kline-Kahn reading of 4 plus. The Wassermann readings on those were as follows: negative in three; plus-minus in one; 1 plus in two; 2 plus in four; 3 plus in five and 4 plus in four. The Vernes readings on these nineteen specimens were: 0, 0, 0, 2, 5, 5, 8, 9, 13, 17, 19, 20, 21, 22, 22, 29, 56, 66 and 71. In the groups of specimens with positive diagnostic readings by one method, the discord with either of the other serologic methods amounted to approximately 50 per cent. Some of the discordant results were especially remarkable, for example: Wassermann reaction negative, Vernes reading 71, Kline-Kahn reading 4 plus; Wassermann reaction 4 plus, Vernes reading 52, Kline-Kahn reading negative; Wassermann reaction 3 plus, Vernes reading zero, and Kline-Kahn reading 4 plus.

COMMENT

The lack of correlation between the Wassermann reading and the Vernes reading on identical specimens of serum from old, latent and treated syphilitic patients was shown in a previous report.[1] It is now clearly evident that the precipitation test carried out by the Kline-Kahn technic is also discordant with one or the other of these or with both of them, in a considerable proportion of such specimens. It is true that, by including in a series of tests a large proportion of specimens from nonsyphilitic patients and specimens from persons with relatively early syphilis who had not been treated, the three tests may be found to agree in a large proportion of the specimens, probably between 90 and 95 per cent. From such series, one may gain the impression that all three tests measure the same thing in the blood serum, possibly a single lipoidophilic reagin. A small series of specimens from old, treated and latent syphilis suffices to upset this deduction and to demonstrate that each of these three tests is a measure of something which the others may fail to detect.

There is a suggestion that certain clinical varieties of syphilis may give positive serologic readings by one method rather than by another.

1. Baylis, A. B.; Sheplar, A. E., and MacNeal, W. J.: The Vernes Flocculation Test for Syphilis, Arch. Dermat. & Syph. **12**:242 (Aug.) 1925.

It appears that congenital syphilis may give a negative Wassermann reading, while the precipitation or flocculation test may indicate a positive diagnosis. The Vernes flocculation test sometimes tends to give a low reading on the blood serum in neurosyphilis, when the other tests may be positive. The Kline-Kahn precipitation test also shows negative results when the others are positive in cases of vascular syphilis and in cases of old latent syphilis. Further comparative studies of the three tests will be necessary before the validity of these suggestions can be adequately established for practical use in differentiating location and activity of syphilitic lesions.

SUMMARY

1. Comparative tests on the identical specimen of serum by Wassermann complement-fixation, by Vernes flocculation and by Kline-Kahn precipitation methods agree well in specimens of blood from persons free from syphilis and fairly well in cases of moderately early, clinically active syphilis.

2. In latent, treated and old cases of syphilis the three tests are often discordant, and any single test is obviously unreliable in such instances. The positive reaction in each test appears to depend, in part at least, on changes in the blood, to which the other two tests are insensitive.

Obituary

LUCIUS DUNCAN BULKLEY, M.D.

1845-1928

Lucius Duncan Bulkley of New York died on July 20, 1928, at the home of his daughter, in Englewood, N. J. Dr. Bulkley was one of the original members of the New York Dermatological Society and of the staff of the New York Skin and Cancer Hospital. He had served as chairman of the Section on Dermatology and Syphilology of the American Medical Association for six years, and as president of the New York Dermatological Society and of the New York Academy of Medicine. His death removes a figure prominent in the early days of American dermatology.

Abstracts from Current Literature

Cardiovascular Symptoms in Women with Syphilis. A Study of 205 Dispensary Cases with Tertiary Syphilis, 25 with Secondary Syphilis and 78 Controls. J. H. Arnett, Am. J. M. Sc. **176**:65 (July) 1928.

Cardiac enlargement was not determined to be due to syphilis per se, as it was found in both syphilitic patients and in control subjects. Aortitis was found in 3.2 per cent of the tertiary group; aortic regurgitation in 2 per cent.

In the tertiary group arterial hypertension was most common; in the secondary group arterial hypertension was more pronounced. Age bore a direct proportion to the incidence of hypertension, cardiac enlargement, aortitis and aortic regurgitation. Both syphilitic groups showed more tachycardia than the control subjects, but in none of the secondary cases was organic cardiovascular disease demonstrable, nor were any cases of aneurysm found.

The Significance of Arsenic in the Excretions. Karl Vogel, Am. J. M. Sc. **176**:215 (Aug.) 1928.

The reports of many cases are recorded in which arsenic was found in the system, and there are so many possible modes of access to the body that many persons may accumulate arsenic even without symptoms. Eighty-five per cent of the cases of jaundice here reported showed retention of arsenic, nine cases being fatal. Vogel recommends a course of sodium thiosulphate if arsenic is found in a jaundiced patient, this being given before any operation is performed.

Occurrence of Hypersensitiveness or Allergy in Five Generations of One Family. Abigail E. Smith, Arch. Int. Med. **41**:472 (April) 1928.

In this family of five generations, the history of ninety-four persons were studied by means of questionnaires with regard to asthma, hay-fever, vasomotor rhinitis, urticaria, angioneurotic edema and eczema.

Fifty-six and two-tenths per cent of this family were found to be allergic, showing that allergy is familial in distribution and that certain forms tend to be prevalent among closely related persons.

Second Infection in Syphilis; Its Relation to the Time of Treatment of the First Infection. C. R. L. Halley and H. Wassermann, Arch. Int. Med. **41**:843 (June) 1928.

A review is given of 237 cases of second infection in which the criteria for such classification were present. All of the patients with the exception of five had been treated for the first infection in the primary or secondary stage. Four of the cases were latent and one was congenital; yet the patients acquired a second infection. No patient with second infection had had treatment started with tertiary lesions present.

The number of second infections diminished inversely as the interval between the onset of the first infection and the initiation of treatment lengthened. For the first infection, all the patients received arsphenamine alone or in combination with other drugs.

In this series only eight women were found with second infections, and eight patients had third infections.

No undoubted case of second infection was found in any patient who had had syphilis of the central nervous or cardiovascular systems.

Jamieson, Detroit.

A Peculiar Form of Infectious Dermatitis Probably Produced by a Hitherto Undescribed Species of Escherichia. S. L. Vaughn, Bull. Buffalo Gen. Hosp. **6**:23 (July) 1928.

The author reports two cases of peculiar form of chronic infectious dermatitis occurring on the wrists of green-house workers. A bacillus was isolated in each case which belonged to the genus *Escherichia*, but which could not be identified with any of the known species of that genus. The author proposes the name *Escherichia dermatitidis*. The bacteriology is described in full.

The Antitoxin Treatment of Erysipelas. D. Symmers, J. A. M. A. **91**:535 (Aug. 25) 1928.

A critical analysis is made of 705 cases in which the patients were treated with antitoxin. The author concludes that the results in controlling immediate attacks are commensurate with results obtained in the antitoxin treatment of patients with diphtheria. The injections are best given intramuscularly in full therapeutic doses. Patients with facial erysipelas responded more readily than did those with erysipelas of the trunk or extremities. In all types the percentage of cures was greatly increased, and the length of the patients' stay in the hospital was radically reduced. The report embodies two tables, and every phase of the subject is adequately treated.

Treatment of Neurosyphilis by Malaria. P. A. O'Leary, J. A. M. A. **91**:543 (Aug. 25) 1928.

Results obtained in 358 patients treated during the past four years indicate that for a selected group manifesting early signs of paresis fever therapy offers the best means of producing remissions. Malaria is slightly more efficient than typhoid, but it requires institutional care and special facilities. In the nonparetic group of cases, the serologic reversals, which develop in from three to four years after treatment, are so pronounced that the author recommends malaria treatment in the cases of neurosyphilis in which the patients fail to show favorable clinical and serologic response early in the course of treatment. Those who benefit most from fever therapy are the ones who show the least evidence of parenchymatous degeneration.

Common Dermatoses Encountered Among Tuberculous and Nontuberculous Exservice Patients. F. J. Eichenlaub, J. A. M. A. **91**:545 (Aug. 25) 1928.

The author briefly reviews the various etiologic theories of diseases of the skin commonly placed in the tuberculous group, and tabulates the many diseases of the skin encountered among 2,539 patients examined at the United States Veterans Diagnostic Center. Fifty-four per cent of these had diseases of the skin; about 30 per cent had tuberculosis in some form. Among the tuberculous, about 37 per cent had diseases of the skin; among the nontuberculous 53 per cent had skin trouble. The tables would seem to indicate that inflammations and infections of the skin are likely to occur less frequently among tuberculous than among the nontuberculous patients. Lupus erythematosus was found only once in 759 patients with tuberculosis. Tuberculids among tuberculous patients numbered 0.4 per cent, whereas, 50 per cent of the patients with tuberculids had tuberculosis. The author concludes that it is hazardous to associate any disease of the skin with tuberculosis because it occurs in tuberculous patients.

Fissures of the Nose. R. L. Sutton, J. A. M. A. **91**:567 (Aug. 25) 1928.

The author treats simple fissures of the anterior nares by applying the needle pointed electric cautery to the outstretched surface. As a rule, relief is prompt and permanent.

THE ETIOLOGY AND TREATMENT OF PITYRIASIS ROSEA. H. H. HAZEN, J. A. M. A. **91**:645 (Sept. 1) 1928.

Hazen is of the opinion that pityriasis rosea is an infection, probably due to diseased tonsils. He reports excellent results from the use of an erythema dose of ultraviolet rays.

RATTNER, Chicago.

INFLUENCE OF LIGHT ENVIRONMENT ON THE GROWTH AND NUTRITION OF NORMAL RABBITS WITH ESPECIAL REFERENCE TO THE ACTION OF NEON LIGHT. WADE H. BROWN, J. Exper. Med. **48**:31 (July) 1928.

These experiments showed that the growth and nutrition of the rabbits studied were greatly affected by their light environment. The effects produced by a given environment varied with the color and breed of the animal and were not proportional to the intensity of light.

INFLUENCE OF LIGHT ENVIRONMENT ON THE GROWTH OF HAIR IN NORMAL RABBITS WITH ESPECIAL REFERENCE TO THE ACTION OF NEON LIGHT. WADE H. BROWN, J. Exper. Med. **48**:57 (July) 1928.

The growth of hair in the animals used was comparable to the effects produced on their growth and nutrition in the same environmental conditions.

RECIPROCAL EFFECTS OF CONCOMITANT INFECTIONS. II. THE INFLUENCE OF VACCINAL IMMUNITY ON THE REACTION TO EXPERIMENTAL SYPHILIS. LOUISE PEARCE, J. Exper. Med. **48**:125 (July) 1928.

Experimental syphilis in rabbits immune to vaccine virus was modified to a great extent, being less severe than in control animals.

Those inoculated simultaneously intratesticularly also showed a comparable modification of the disease. The manner of inoculating two experimental diseases concomitantly is evidently a factor in determining the type of reaction induced.

THE MICROBIOLOGY OF LEPROSY BACILLUS. W. J. KEDROWSKY, J. Trop. Med. **31**:17 (Jan. 16) 1928.

A discussion is made of the difficulties of differentiation between bacilli of the acid-fast groups.

The leprosy bacillus was considered to be both acid-fast and nonacid-fast. According to the complexity of its development and structure it should be placed in the group of actinomyces or streptothrices-like organisms, the bacillary form being only one form of its state of being.

BARTONELLA MURIS; ITS PATHOGENIC ACTION IN THE PROGRESSIVE ANAEMIA FOLLOWING RAT SPLENECTOMY AND ITS RESEMBLANCE TO B. BACILLIFORMIS OF CARRION'S DISEASE. H. P. BAYON, J. Trop. Med. **31**:29 (Feb.) 1928.

These investigations tended to confirm the conclusions of other workers regarding the identity of B. muris and B. bacilliformis. They show that by injuring or inhibiting the functions of the spleen in rats, one can bring to light the cryptic infection with a micro-organism the multiplication of which, in a suitable host, causes the development of a deadly progressive anemia, comparable to Oroya fever.

THE PARASITE THAT CAUSES SMALLPOX. J. J. CLARKE, J. Trop. Med. **31**:41 (Feb. 15) 1928.

A technical discussion is made in which the author concludes that the bodies discovered by Guarnieri and called Cytorrhyctes vaccinae and variolae are the true parasitic cause of smallpox.

MONILIASIS LINGUAE. E. C. SMITH, J. Trop. Med. **31**:101 (May 1) 1928.

Sections of curettings showed the membrane to be composed of degenerated epithelium, the lower surface showing the impress of the papillary layer. Mycelial elements ramified throughout this cellular tissue.

NOTES ON RHINOPHARYNGITIS MUTILANS. E. MAASS, J. Trop. Med. **31**:102 (May 1) 1928.

All patients given antiyaws treatment were readily cured and all but one had a history of yaws. This report substantiates the claim that this disease is a specific frambetic condition.

ALLERGY AND SUPERINFECTION IN SYPHILIS. E. BIZZOZERO and J. BERNUCCI, Ann. de dermat. et syph. **9**:553 (July) 1928.

Earlier researches on allergy in syphilis are open to criticism since objections could be raised to the antigens employed. The authors used an antigen obtained by vesication of secondary syphilids and injected it intradermally.

The results of investigations on 106 patients are recounted. In the primary stage, 76 per cent gave an allergic response; while in the secondary stage, the percentage was somewhat less (73 per cent). During latent stages the allergic reaction approximated 100 per cent. The response was most intense during the tertiary period.

The allergic reaction may follow three courses: (1) disappearance in from two to three days, (2) partial or complete resolution followed by a recrudescence of a specific type, and (3) an intense reaction with progression and activity over a long period of time. The second type is common in the secondary; the third, in the tertiary stage. These observations show plainly that the manifestations of syphilis are the result of the tissue hypersensibility to the spirochetes contained in the lesions. The character of the allergic reaction parallels the stage of the disease in most instances, but this rule is not absolute. The authors noted that superinfection may be obtained in tabes frequently but rarely in paresis.

They also found that differences in aspect and evolution of the reaction in the same subject produced by different antigens were dependent on the number of spirochetes injected and their variations. Hence the allergic response rests on two factors; the terrain and the spirochete. From their investigation of the fate of spirochetes in the lesions, the authors conclude that in a good percentage of cases they die at the site of the lesions. In some cases there is a limited diffusion and in others a general diffusion. In cases of superinfection, it appears probable that there is a wide diffusion of the organism with a partial acquired immunity of the integument.

THE SEROLOGIC DIAGNOSIS OF SYPHILIS IN LEPROSY. J. MARGAROT and P. DEVEZE, Ann. de dermat. et syph. **9**:576 (July) 1928.

The authors have examined anew the Wassermann reaction in leprosy. They used three antigens and tested each against heated and unheated serum. From an experience with ten cases of leprosy thus examined, they concluded that when all of their antigens gave positive results, syphilis was present, but when discordant results were obtained, syphilis could be excluded. Again, it could be excluded when antisyphilitic treatment was without influence on the test and when reactions varied without regard to the course of the leprosy.

PAPULOKERATOTIC DERMATITIS DUE TO SCURVY: REPORT OF CASE. S. THEODORESCOU, Ann. de dermat. et syph. **9**:581 (July) 1928.

The clinical manifestations in this case agree with those reported by Nicolau during the war. A generalized follicular papular dermatitis, with keratotic elements due to confluence, is described. The disorder disappeared under appropriate scorbutic therapy, and thus the causal relation was demonstrated. The skin lesions are sometimes a precursor of the systemic symptoms of scurvy.

TERTIARY CHANCRIFORM SYPHILOMA APPEARING SEVENTEEN YEARS AFTER THE CHANCRE DURING TREATMENT WITH MERCURY AND BISMUTH. P. GIACARDY, Ann. de dermat. et syph. **9**:589 (July) 1928.

Giacardy recounts the history of a patient who acquired a penile chancre and who did not receive any treatment for it. When seen by the author, he had mental symptoms, and mercury and bismuth were administered. During this treatment a chancre redux appeared. This occurrence evidences in the author's opinion the survival of spirochetes for long periods of time in the scar of a chancre when insufficient treatment has been given.

A CASE OF LUPUS ERYTHEMATOSUS OF FOUR YEARS' DURATION IN WHICH THE CONDITION WAS GREATLY IMPROVED FOLLOWING TREATMENT WITH A GOLD SALT. M. PINARD, P. VERNIER and VERSINI, Bull. Soc. franç. de dermat. et syph. **35**:443, 1928.

The case reported was of a discoid type. A gold compound was administered and decided improvement was produced.

LUPUS PERNIO. M. RABUT, Bull. Soc. franç. de dermat. et syph. **35**:448, 1928.

The patient was presented in 1921, at which time she showed Boeck's sarcoid, fusiform digital swelling and epiphyseal decalcification (Schaumann's triad). These manifestations disappeared for five years, when there developed tumefaction of the nose and cheeks of the classic type of lupus pernio. The histologic structure was similar at each period. This case confirms the contention of Schaumann that sarcoid of Boeck and lupus pernio have the same cause, but leaves open the question that they are tuberculous processes.

CONSIDERATIONS ON A CASE OF JUXTA-ARTICULAR NODULES OCCURRING IN A SYPHILITIC PATIENT. JEANSELME, BURNIER and ELIASCHEFF, Bull. Soc. franç. de dermat. et syph. **35**:450, 1928.

The patient had a firm nodosity below the left olecranon. Radiography gave normal observations. Latent syphilis was demonstrable. He was given bismuth with a change in the Wassermann test from a positive to a negative reaction. The nodule was removed and studied microscopically. It showed numerous blood vessels, perivascular infiltration, areate necrobiosis of the collagen and fatty degeneration in the islands. The authors believe that in this case the syphilitic etiology is proved; though a rheumatic attack that the patient experienced was not without influence.

NEW RESULTS OBTAINED WITH THE COMPLEMENT-FIXATION REACTION IN NICOLAS-FAVRE DISEASE. KITCHEVATZ and KITCHEVATZ-PETROVITCH, Bull. Soc. franç. de dermat. et syph. **35**:459, 1928.

Their previous preliminary study on this subject is recalled by the authors. In the present study they give the results of the complement-fixation test in twenty-two cases of poradenitis. Fifteen positive tests were obtained. They used, as antigen, an emulsion of a bacillus cultured by them. Animal inoculation also gave positive results. In 323 normal serums, only 3 positive complement-fixation tests with their organism were encountered.

A CASE OF LICHEN PLANUS IN WHICH THE PATIENT WAS CURED BY AUTOHEMOTHERAPY. R. BARTHELEMY, Bull. Soc. franç. de dermat. et syph. **35**:461, 1928.

The patient had an acute case of lichen planus with severe subjective symptoms which responded rapidly to injections of whole blood.

DIRECT CRYOTHERAPY BY MEANS OF A MIXTURE OF CARBON DIOXIDE SNOW AND ACETONE. GIRADEAU, Bull. Soc. franç. de dermat. et syph. **35**:463, 1928.

The proposed mixture of carbon dioxide snow and acetone forms a paste which is applied directly to the surface of the skin with or without compression. Simplicity, rapid and constant refrigeration and adaptability to irregular surfaces constitute its advantages.

TREATMENT OF LUPUS VULGARIS BY THE LOCAL APPLICATION OF A METHYL ANTIGEN. G. HUFSCHMITT, Bull. Soc. franç. de dermat. et syph. **35**:466, 1928.

The antigen was used intradermally alone and incorporated in lanolin. In three cases practically no change was noted; in two cases good effects were obtained.

MICHAEL, Houston, Texas.

DERMATOLOGIC ABSTRACTS

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

DIAGNOSIS OF SYPHILIS FROM STANDPOINT OF INTERNIST: INCIDENCE OF NEUROSYPHILIS. W. C. STONER, Am. J. Syph. **12**:340 (July) 1928.

Stoner asserts that approximately 5 per cent of the white population of his community are syphilitic from observations made over a period of ten years and that the last five years of this period show a much lower incidence. Unrecognized and improperly treated syphilis is very much less common than even ten years ago. The Wassermann reaction is only an adjunct in diagnosis and cannot be applied rationally, independent of history and clinical picture. Neurosyphilis is probably less common than formerly, as shown by a much smaller incidence in the last five-year period, during which a larger volume of cases for diagnosis were studied than in the first five-year period. A survey of admissions to hospitals over the country for a ten-year period indicates a definite lowering of the incidence of neurosyphilis. Syphilitic aortitis is recognizably present in only a small percentage of neurosyphilitic involvements.

TECHNIC FOR INJECTIONS INTO GLUTEAL MUSCLES. C. P. MATHÉ, Am. J. Syph. **12**:362 (July) 1928.

A simple and safe method is proposed by Mathé, based on an anatomic dissection of the structures of the gluteal region, for the intramuscular administration of the various insoluble salts of arsenic, mercury and bismuth, in the treatment of syphilis. The muscles most often employed are those of the gluteal region. The method consists of making a deep injection at an oblique angle into the superior and inferior layers of muscles of the gluteal region in the area corresponding to the midpoint of a line drawn from the tip of the sacrum to the anterior superior spine. When this method of injection is employed, the solutions are more likely to enter into the fleshy portion of the gluteal muscles, and less likely to injure the great sciatic nerve or enter the blood streams or cause the formation of painful, persistent nodules. Also there is less likelihood of immediate pain with the injection.

EFFECT OF THERAPEUTIC DOSES OF ARSPHENAMINE ON INJURED LIVER (EXPERIMENTAL). F. A. MCJUNKIN, Am. J. Syph. **12**:365 (July) 1928.

The experimental work done by McJunkin on rabbits would indicate that a nonsyphilitic lesion of the liver, whether acute or chronic, is not of itself a contraindication to the arsphenamine treatment of the individual's syphilis.

SODIUM THIOSULPHATE: TOXICITY AND CHEMICAL CHANGES IN BLOOD: INTRAVENOUS ADMINISTRATION. S. GOLDBLATT and C. C. DENNIE, Am. J. Syph. **12**:369 (July) 1928.

Experimental work done by Goldblatt and Dennie shows that chemically pure sodium thiosulphate precipitated from aqueous solution by alcohol may be used as an intravenous medicament without fear of reaction. Ordinary chemically pure sodium thiosulphate is unfit for intravenous use because of the liability to produce a primary convulsive reaction which may terminate fatally. Changes in the chemistry of the blood due to the injection of sodium thiosulphate are apparently confined to a moderate increase in the chloride content and a depression of the dextrose. When death is produced by less than fourteen daily injections of the toxic drug, the animal does not present any typical gross pathologic changes.

PSORIASIS: BLOOD CHEMISTRY STUDIES: TREATMENT. B. THRONE and C. N. MYERS, New York State J. Med. **28**:914, (Aug. 1) 1928.

Thirty-five cases of psoriasis were studied by Throne and Myers. No evidence of nitrogen retention was found in any case. Untreated patients in the early stage of this condition show, as a rule, a normal blood as far as sugar, chlorides, urea nitrogen and uric acid are concerned. Sodium thiosulphate is of no value in the treatment of patients whose blood does not show so-called metallic picture; that is, a high sugar and a low chloride content. Sodium thiosulphate is of great value in those cases showing the metallic blood picture. In cases in which the disease process is present in large sheets or in which it is universal, its action is frequently curative. Nail involvement has also responded to this line of therapy. The action of sodium thiosulphate in these cases is in removing the retained metal from regions in which it has been precipitated and in reactivating it. It also seems to have an action on the accompanying acidosis. Gold therapy is not of any special value in the treatment of psoriasis. The use of gold compounds in this disease should always be preceded by a chemical analysis of the blood. A high blood sugar and a low blood chloride are positive contraindications for gold therapy. The authors believe that psoriasis per se never involves the palms or nails, and that it never occurs in large sheets or becomes universal unless there is a metallic retention. They do not make any claim that arsenic or any of the other heavy metals is concerned with the genesis of psoriasis.

CONNECTION BETWEEN ECZEMA AND DISTURBANCE OF OVARIAN FUNCTION. P. SZEGÖ, Lancet **52**:1593 (June 23) 1928.

Szegö reports sixteen cases in which skin disease was associated with ovarian disturbance. Six cases occurred in the menopause, three in pregnancy, one after roentgen-ray castration, one after removal of the ovaries; three were associated with infantilism, and two with insufficiency of ovarian function. Among these there were twelve cases of chronic and acute eczema; two cases of eczema with furunculosis and two cases of dermatitis. Ovarian extract given by intravenous or intramuscular injection was found effective in relieving both the ovarian disorder and the skin condition. Nine patients were reported as cured, three improved; one patient showed no effect; and the other three patients did not remain under control.

Society Transactions

NEW YORK ACADEMY OF MEDICINE, SECTION ON DERMATOLOGY AND SYPHILOLOGY

J. J. ELLER, M.D., *Secretary*

Regular Meeting, March 6, 1928

E. R. MALONEY, M.D., *Chairman*

PEMPHIGUS VULGARIS. Presented by DR. WISE.

H. E., aged 27, a wood-turner, born in Austria, had been shown before the New York Dermatological Society on Feb. 28, 1928. Bullae had continued to develop in the mouth. Examination revealed irregularly denuded, bright red areas over the roof of the mouth, on the cheeks, and on the soft palate. There was some swelling and eczematization of the umbilicus which was covered with a few flaccid bullae. There were also small vegetating lesions about the anus.

The results of the Wassermann test, fungus examination and examination for Vincent's organisms were all negative.

PEMPHIGUS VULGARIS. Presented by DR. WISE.

E. A., a housewife, aged 56, born in Germany, was admitted to the Skin Clinic of the New York Post-Graduate Medical School and Hospital on Feb. 11, 1928. She said that for the past five weeks she had been suffering with a sore mouth and excessive salivation. Examination revealed a superficial erosion of the inner side of the right cheek and a few sharply refined patches on the lips, which had erythematous borders; these were covered with grayish exudate. Other lesions were not found.

The bacteriologic examination for Vincent's organisms was negative, as was also the Wassermann test.

A mouth wash was prescribed and injections of arsenic were given. The improvement had not been marked to date.

DISCUSSION

DR. LANE: I saw the first patient a week ago, when I was uncertain as to the diagnosis. I am now willing to agree to the diagnosis of pemphigus.

DR. MCCAFFERTY: Recently, Dr. Hollander, of Pittsburgh, published reports on a series of cases of pemphigus which had been markedly improved by blood transfusions. A short time ago a patient with an extremely severe case of pemphigus was treated in Dr. Dillingham's service at the New York Polyclinic Hospital. About one week after the first transfusion, the lesions of the mouth cleared up entirely and the lesions on the body improved greatly. In the axillae and groins, where the lesions were vegetating slightly, they cleared up in three weeks.

A second patient was seen at the Vanderbilt Clinic. At the suggestion of Dr. Andrews, she was referred to Dr. Dillingham's service at the Polyclinic Hospital, for blood transfusions. Up to the present time, she has had two blood transfusions at ten day intervals. Following the first transfusion, the lesions of the mouth cleared up entirely, so that she was able to eat and talk comfortably. Bullous lesions on the body, however, continued to make their appearance, but since ten days after the second transfusion only a few have appeared on the body. The large, denuded surfaces under the breasts, in the axillae and the groins which followed the bullous lesions are beginning to clear up, and the patient is more

comfortable. Both of these patients have been given injections of arsenic in addition to the transfusions. The results in these two cases have been extremely satisfactory, and the lesions give promise of clearing up entirely. The treatment should certainly be tried in all cases of acute pemphigus.

DR. WERTHEIMER: Referring to the use of transfusion in cases of pemphigus, I had one patient in whom this was tried. There was not any appreciable benefit from the transfusion, and the patient died a short time later.

DR. HIGHMAN: Dr. McCafferty's remarks remind me of a patient with pemphigus whom I treated years ago. During the week immediately following the discontinuance of all treatment, the symptoms disappeared entirely.

DR. CANNON: I agree with the diagnosis of pemphigus in the first case. I presented a similar case at one of the previous meetings, in which the lesions were confined to the mucous membrane of the mouth. About two weeks later, the patient developed a generalized pemphigus from which she died. I have given blood transfusions to a number of patients suffering from pemphigus during the past five or six years, but have never noticed any beneficial results from them.

DR. ROSTENBERG: The lesions on the man's body look like pemphigus. The only peculiar features in the case are the vegetating lesions around the anus, which appear at a rather later stage in ordinary cases of pemphigus; this case is supposedly of extremely short duration.

DR. HIGHMAN: I have seen pemphigus start as such with vegetating lesions around the anus; this is not necessarily a late phenomenon, but is sometimes an initial phenomenon. It may sometimes develop later into a bullous type or it may remain as pemphigus vegetans — as the case may be.

PEMPHIGUS. Presented by DR. SCHEER.

C. N., a widow, aged 69, born in Spain, came to the Skin Clinic of the New York Post-Graduate Medical School and Hospital on Jan. 28, 1928, with the complaint that for the past five years she had been having sores in her mouth. Lately she had been troubled with lacrimation and photophobia.

Examination revealed shrunken, reddened and atrophic eyelids, associated with a narrowing of the palpebral fissures. The conjunctivae were injected, and synechiae limited the movement of the eye. The upper lid of the left eye showed a sharply defined, reddish brown patch; a similar lesion was noted on the left ear, except that it had a blackish crust. There was a moist, eczematous circumscribed plaque over the area of the right mastoid. The hard and soft palates were red and moist. The left ala of the nose was covered by a reddish brown, slightly moist patch. The limbs were not involved. The patient was asthmatic and asthenic. Nikolsky's sign was absent. The Wassermann reaction was negative.

DISCUSSION

DR. OULMANN: I presented this patient five years ago before the Manhattan Dermatological Society. At that time the lesions existed only in the mouth, and some of the members doubted the diagnosis.

DR. CHARGIN: It is well known that when pemphigus occurs on the mucous membrane of the eye it may last many years before it becomes generalized. This seems to be a case in point.

DR. SCHEER: The interesting feature of the case is the involvement of the conjunctivae, not commonly seen by us — perhaps better known to the ophthalmologists. I think the last case with conjunctival lesions was shown before this section more than a decade ago.

SYPHILITIC KERATODERMA. Presented by DR. WISE.

T. R., aged 53, a housewife, born in Italy, was referred from Dr. Stetson's service at Lincoln Hospital to the Skin Clinic of the New York Post-Graduate

Medical School and Hospital on Dec. 20, 1927. She complained of itching and dryness of the palms and soles of five years' duration. She had had five miscarriages and had borne five living children. She said that she had never had any manifestation of syphilis. Previous local therapy had failed to relieve her. Roentgen-ray treatment had never been given.

The patient presented anisocoria and serpiginous, fissured, dirty-yellow thickening of the palms and soles. The skin between these circinate hyperkeratoses was dry and roughened. On the dorsal surface of the fingers of both hands, there was also local thickening of the skin which, for the most part, was cracked and dirty yellow. The Wassermann test was negative.

Weekly injections of a bismuth compound brought about the disappearance of the lesions from the soles and a diminution of the process in the palms.

DISCUSSION

DR. CANNON: I have never seen a syphilitic keratoderma involving both the palms and the soles. The only thing I have seen to suggest syphilis in this case is the circinate character of the lesions in the palm of the right hand. I think that the absence of change in color, infiltration or papules and the negative Wassermann test speak against the condition being due to syphilis. It is known that many nonsyphilitic lesions often improve under injections of arsphenamine or of bismuth compounds.

DR. LAPOWSKI: What forms of keratosis of the palms can resemble this?

DR. CANNON: Psoriasis, arsenical keratosis, lichen planus or an occupational dermatitis.

DR. LAPOWSKI: The appearance of the lesions on the palms is characteristic of syphilis. This is a classic syphilitic lesion of the palms, and I disagree with the statement that any disease of the skin can resemble it, except keratosis blenorrhagica.

DR. CHARGIN: There are several unusual features about this case. If the lesions are syphilitic, they belong to the late syphilids which are usually unilateral, whereas in this case they are bilateral. Moreover, there is a marked hyperkeratosis with fissures, but the papules and ulcerations usually observed in cases of this type are absent; lastly, the Wassermann test is negative — all unusual features. Still, because of the marked response to antisyphilitic treatment one must accept the diagnosis of syphilis.

DR. MCCAFFERTY: The eruption on the palms and soles is probably syphilitic in origin. However, I suggest that a microscopic examination and cultures be made for fungi. I have seen dermatophytosis on the feet which resembles this patient's condition almost identically.

DR. WEIDMAN, Philadelphia: The most outstanding peculiarity of this dermatosis on the palms seems to be the absence of infiltration at the base of the lesion; it appears to be a pure keratosis. It may be that this patient has not been under observation sufficiently long for the presenter to state that there was or was not such an infiltration at any time, but should it develop that there never was such an infiltration, there is an interesting commentary here on the deviousness of the ways and means of syphilis. Thus, the stock reaction of syphilis is "chronic inflammatory," i. e., a compound pathologic process; but here it would be a simple one, which was simply metabolic — a vice of keratization (dyskeratosis in the sense in which Dr. Fraser uses the term).

DR. WISE: It is true, as Dr. Weidman suggests, that we have not had the patient long enough under observation to note the infiltrated papules which accompany the disease when treatment has not been given. The diagnosis of syphilis was made partly on account of anisocoria, which is not congenital. The Wassermann test was negative, but only one examination was made. The diagnosis of syphilitic keratoderma of the palms and soles is applicable to patients who have had syphilis

as many as thirty years previously, and the patient has improved under antisyphilitic treatment. All of these facts would favor the diagnosis of syphilis.

DR. CANNON: Do I understand that Dr. Wise made the diagnosis of syphilis because of the inequality of the pupils and not from the character of the palmar keratosis?

DR. WISE: I made the diagnosis on account of the presence of acquired anisocoria and the lesions on the palms and soles, which I interpreted as being syphilitic and which had improved under antisyphilitic treatment.

DR. ELLER: The patient presented an inequality of the pupils, which made us suspect a possible cerebrospinal syphilis.

DR. ROSEN: I think that it is unfair to present the patient this evening and expect agreement in the diagnosis, because the clinical features of the palmar lesions are greatly masked by the improvement which followed antisyphilitic therapy.

SARCOID. Presented by DR. SCHEER.

J. A., a factory worker, aged 18, came to the Skin Clinic of the New York Post-Graduate Medical School and Hospital on Sept. 26, 1927, complaining of a lesion on the back of the neck, of six months' duration. He said that two years previously he had had a furuncle in the same location. The lesion was infiltrated, reddish and about the size of a silver quarter. The border was more indurated than the center of the plaque. The histologic appearance was that of superficial sarcoid. The patient was treated with supersoft roentgen rays, and there had been some resolution.

SCLERODERMA AND FACIAL HEMIATROPHY. Presented by DR. ELLER.

D. G., a girl, aged 13, from the New York Post-Graduate Skin Clinic, presented herself on Aug. 30, 1928, for treatment of a condition of the skin, of seven years' duration. The condition began just above the right breast, and gradually spread so as to involve the face, neck, trunk and the upper and lower extremities of the left side. The disease had left marked contractures of the left side of the body.

As presented, the patient exhibited marked contracture of the left side of the face, particularly the left angle of the mouth — which was drawn upward, exposing the upper incisors. The skin was involved over both scapulae, the left clavicular region, the left breast, the left abdominal flank, the left arm and a small area near the right axilla. The left lower extremity was also affected. The skin over these areas was thinned, shiny and showed numerous atrophic patches. These areas were not usually pigmented, nor did they show any hardening. There was marked wasting of both the upper and lower extremities of the left side.

DISCUSSION

DR. WISE: The child requires treatment and I would be grateful for any suggestions.

DR. WOLF: I had occasion to treat a patient with a similar condition at Mount Sinai Hospital. First I examined the patient for hyperglycemia; then I made a basal metabolism test and a roentgenographic examination of the sella turcica. The case in which these tests were made was found to show beginning changes in the sella turcica. The patient was treated with deep roentgen-ray therapy. It is too soon yet to notice any changes. Incidentally, she received fifteen intravenous injections of hyposulphite of soda without any appreciable effect.

DR. WEIDMAN: I have nothing to suggest in the way of treatment, but it struck me that the character of the lesions was definitely that of a disease of the nerve; also how much some of them resembled the lesions of leprosy — the atrophy, pigmentation, etc. Some of the lesions were symmetrical, too, as on the shoulder.

FIBROSUM MOLLUSCUM (ABORTIVE). Presented by DR. ELLER for DR. LERNER.

J. L., aged 58, from the New York Post-Graduate Skin Clinic, married, a tinsmith, born in Russia, presented himself on Oct. 4, 1927, with an eruption of five years' duration. He showed closely crowded, irregular, brownish macules on the flexor and external aspects of both legs, back and shoulders, and on the flexor and external surfaces of the arms. There was a brown patch the size of a silver dollar on the abdomen. The lesions were annular and did not show any atrophy. On the lower part of the back there was an ill defined subcutaneous nodule the size of a pea. He also had varicose eczema of both legs about the ankles.

DISCUSSION

DR. WISE: In my opinion, the tumor together with the many freckle-like lesions and the large café-au-lait spot on the abdomen point to a probable von Recklinghausen's disease. The eruption on the legs appears to be a pigmentation resulting from an old varicose ulcer.

DR. ROSTENBERG: If this case is accepted as one of von Recklinghausen's disease, it must be classified as the abortive type. To my mind, the man is too old to show this type. The abortive type of true von Recklinghausen's disease begins at an early age and in later years often assumes the tumor type.

DR. ELLER: I do not think that the age is against the diagnosis; the tumors or pigmentation of von Recklinghausen's disease may appear at any age. I have seen patients in whom the tumors did not begin to appear until the age of 42.

GUMMA OF THE HARD PALATE. Presented by DR. SCHEER.

R. G., aged 49, a coal worker, born in the United States, married, came to the New York Post-Graduate Skin Clinic on Feb. 28, 1928, complaining of a lump in the mouth, of three weeks' duration. The tumor became painful and caused dysphagia. Thirty years previously he had had a gonorrheal infection. He said that he had never had a chancre or other manifestation of syphilis. His wife had a living child by a previous marriage. She had not become pregnant or had had any miscarriage since living with him.

He presented inequality of the pupils, which reacted sluggishly to light and in accommodation. On the hard palate and extending partially over to the soft palate, there was a deeply excavated ulcer with a central slough and overhanging borders. The ulcer was about the size of a quarter. The Wassermann test was 4 plus.

DISCUSSION

DR. PAROUNAGIAN: I examined the patient carefully, and I must say that I was not convinced with the diagnosis of gumma, despite the positive Wassermann reaction. The lesion was too sharply defined, had clean rolled edges, was red, free from gummous secretion, was not undermined and did not have an irregular outline. The history of three weeks' duration was not reliable, as he stated to me that he had had it for about three months. In my opinion, we have to depend on the therapeutic test before accepting that diagnosis.

DR. ROSTENBERGH: Has an examination been made for Vincent's organisms in this case?

DR. ELLER: Examination has not been made for Vincent's organisms.

DR. HIGHMAN: Has the patient been under treatment? If so, what is the effect?

DR. SCHEER: The patient came in so recently that treatment has not yet been started.

DR. LANE: I accept the diagnosis of gumma, but the combination of gumma and epithelioma has always to be considered.

DR. HIGHMAN: If there is any question of whether this is gumma or epithelioma, possibly the best thing to do, before losing any time, would be to put the patient in a hospital and be ready to proceed rapidly if it is found to be an epithelioma after a microscopic examination. I do not know whether those who have charge of the patient would care to wait for a therapeutic test for syphilis. I would also subscribe to what Dr. Lane said. The possible conjunction of the two conditions is too great to allow ourselves to be carried away by the result of the Wassermann test.

DR. CANNON: The location, the surrounding redness, the lack of hardness and the deep slough are characteristic of gumma. I think the location and the absence of both leukoplakia and hard rolled edges are against the diagnosis of epithelioma.

DR. SCHEER: I am convinced that the lesion is a gumma, and I will put the patient on active antisyphilitic treatment.

LICHEN PLANUS (OF THE MOUTH). Presented by DR. CORNELL.

C. D., aged, 52 from the New York Post-Graduate Skin Clinic, was born in Italy. The eruption began three weeks before presentation. On the left half of the glans penis there was an irregular, sharply-outlined patch, the size of a quarter, violaceous, and composed of small shiny papules. On the tongue, there were large grayish-white patches, and on the mucous surface of the left cheek, posteriorly, there was an irregularly outlined grayish patch with a dendriform arrangement. The Wassermann test was made, but has not yet been reported.

DISCUSSION

DR. ROSEN: This patient was presented on account of the difficulty which sometimes arises in deciding whether one is dealing with lichen planus or with leukoplakia. I believe that it is possible to make a clinical distinction between lichen planus involving the tongue and cheeks and leukoplakia in the absence of lichen planus elsewhere. The color stands out as a glistening pearly white in contradistinction to the dull gray of leukoplakia. In analyzing an involved area, it was noted that it is composed of individual lesions and that there is not any atrophy of the papillae, as seen in leukoplakia. Furthermore, the posterior portion of the mouth is usually involved in lichen planus and the lesion is more or less reticulated, while in leukoplakia the lesion usually has its origin at the angles and extends backward as a solid band.

EPITHELIOMA OF THE UPPER EYELID, CURED BY THE SUPERSOFT ROENTGEN RAY. Presented by DR. ELLER.

C. B., a man, aged 45, from the New York Post-Graduate Skin Clinic, presented a lesion which involved the entire upper eyelid of the right eye. On palpation, the lesion felt cartilaginous, almost button-like. There was some crusting. The eyelashes were present. The weight of the growth was such that the eyelid dropped, covering almost the entire eyeball. This growth had been present for fourteen years. It started as a nodule the size of a pinhead and gradually grew to the size presented. The patient had never been treated for the lesion. He was seen by various dermatologists in consultation, all of whom agreed with the clinical diagnosis of basal cell epithelioma.

Six treatments were given with the supersoft roentgen rays, which were of extremely long wave length, having in their beam a large percentage of the roentgen ray between 1.6 and 2 angstrom units in wave length. The penetration of these wave lengths is comparatively slight, as not more than 5 per cent of the incident radiation reaches the level of the hair follicles. This radiation is produced by a specially constructed, hot cathode tube built on the same principles as the Coolidge tube, with the addition of a Lindemann glass window which permits the long waves to pass through — which the ordinary glass of the usual

roentgen-ray tubes does not. Each of the doses given for the first four treatments was twice the erythema exposure. The last two treatments were one erythema dose each. The intervals were from two to four weeks. The first treatment was given Feb. 10, 1927, and the fourth in June; the last treatment was given on July 15. The voltage used was 8,000, and the distance was 6 cm. Protection was not given to the eyeball, although the skin was screened outside of the involved area. The eyelashes did not fall out at any time. The patient did not complain of any symptoms in the eyeball at any time. Two ophthalmologists, Dr. Bernard Samuels and Dr. Martin Cohen, examined the eyeball at intervals. They did not find any evidence of inflammation at any time.

A photograph was presented to show the appearance of the lesion before therapy, and the patient himself showed the result of the treatment. The lesion had entirely disappeared, the eyelashes were intact and the skin was soft and nonatrophic.

Before the cure was complete, the patient was presented before the skin section of the American Medical Association at the Washington session in 1927, and also before the Eye Section of the New York Academy of Medicine in February, 1928.

EPITHELIOMA (SHOWING RESULT OF TREATMENT). Presented by DR. ELLER for DR. MORSE.

A. G., a man, aged 67, born in Italy, came to the Skin Clinic of the New York Post-Graduate Hospital on Jan. 4, 1928, with a lesion on the lower lip, of seventeen years' duration. It had never completely healed and was growing larger.

On the right side of the lower lip, there was an ulceration about 1 inch long by 3/8 inch wide (2.5 by 0.96 cm.). It was crusted and the border was slightly raised in places, with some infiltration. Adenopathy was not present. The Wassermann reaction of the blood was negative.

On January 6, the lesion was widely and deeply removed with the endotherm knife, under local anesthesia. Radium was applied to the open wound and the roentgen ray was applied to the neck. The wound healed uneventfully and the cosmetic result was excellent.

A microscopic study of the removed growth revealed a prickle-cell carcinoma.

SYCOSIS VULGARIS AND RADIODERMATITIS. Presented by DR. WISE.

W. P., aged 28, an unmarried chauffeur, came to the New York Post-Graduate Skin Clinic on Feb. 16, 1928, complaining of an eruption situated over the temporal and frontal regions involving the eyebrows, of eight years' duration. In 1921, he was treated at the Vanderbilt clinic, receiving about twenty roentgen-ray treatments. He was also treated at the City Hospital. He said that Dr. Howard Fox also gave him roentgen-ray treatments. According to the patient, as long as the hair "stayed off" the face the disease disappeared, while with the return of the hair the eruption reappeared also.

On both temporal regions, the patient presented sharply defined, bluish-red, wrinkled, scaly patches; these showed some evidence of telangiectasia and atrophy. On the eyebrows, there were numerous papulopustules situated at follicular orifices. Similar patches were noted over the temporal regions and on the forehead. There was some superficial atrophy and telangiectasia in the bearded region.

DISCUSSION

DR. LANE: A localized sycosis or impetigo in an adult should always be examined carefully for syphilis, which occasionally closely resembles it.

DR. ELLER: I think that this is a case of sycosis with scarring. The Wassermann reaction was negative, and even if positive this case would simply be one of sycosis in a patient suffering from syphilis.

DR. ROSEN: There is clinical evidence of syphilis in this patient. The patient probably had some form of pyogenic infection of the skin superimposed on a syphilitic process, and the roentgen-ray treatment produced atrophy and telangiectasia, but he still has evidence of a nodular syphiloderm in the temporal region.

THALLIUM EPILATION IN TINEA CAPITIS (3 Cases). Presented by DR. ABRAMOWITZ.

The three patients were treated at the Post-Graduate Skin Clinic. The first patient, J. C., aged 8½ years, born of Italian parents, had had tinea capitis for fifteen months. Spores were found. The dose of thallium acetate was 7 mg. per kilogram of body weight. The epilation began on the sixteenth day. There were not any general symptoms. Ten per cent iodine in goose grease, washings with soap and water and an adhesive cap were employed. Epilation was almost completed, as shown, on the twenty-second day after treatment.

A photograph was submitted, showing the scalp before treatment.

A. S., aged 8, born of Russian Jewish parents, had had tinea of the scalp for three weeks when first seen. Culture revealed *Microsporon audoini*. He was given 7 mg. of thallium per kilogram of body weight four hours after luncheon. Epilation began on the seventh day. General symptoms were not present. Regrowth was noted on the twenty-seventh day. Antiseptic treatment consisted of 10 per cent iodine in goose grease, washings with soap and water and an adhesive cap.

Photographs were submitted showing the scalp before and after the treatment with thallium.

J. S., an Italian boy, aged 6, presented a scalp patch the size of a half dollar, with broken off hairs; the lesion was located on the occipital region and was of one month's duration. He was given 8 mg. of thallium acetate per kilogram of body weight, on a fasting stomach, a total dosage by mouth of 160 mg. Epilation began on the nineteenth day. There were not any general symptoms. The epilation was complete on the twenty-fourth day. Regrowth was noticed on the thirty-first day. An adhesive plaster cap was used to hasten epilation, and a 5 per cent ointment of ammoniated mercury was applied until the regrowth of hair was definitely established. Spores were still present when the new hairs began to return, but since the regrowth became pronounced the scalp had assumed a normal appearance although all antiseptic treatment by the parents had been discontinued.

Photographs were submitted showing the appearance of the scalp before the treatment with thallium and at the time the epilation was beginning.

DISCUSSION

DR. ROSTENBERG: I have treated fifteen patients with this remedy, without any untoward effects excepting in the case of one boy, who complained of muscular pains in the extremities. I feel decidedly that thallium acetate is the remedy of choice in mycotic scalp diseases of young children, especially when they are to be treated in the clinics.

DR. FELDEN: I saw Dr. Abramowitz's patients and was interested to observe that until the present time he has not had any failures in the epilatory action of thallium. In the report on about fifty cases which I published, there was a complete alopecia after treatment with thallium in approximately 75 per cent of the cases. Patients with a marked discrepancy between weight and age failed more or less to respond to 8 mg. per kilogram of body weight. My material consisted of children from an institution for the feebleminded, some of whom were also physically below par. It is possible that disturbances in the endocrine system are responsible for these failures, and that the dosage which is made according to the body weight does not correspond to the size of the endocrine organs in underdeveloped children. Another fact in the material of Dr. Abramowitz was interesting, which I also noticed in some of my cases, that is that the regrown hair was much stronger and darker in color, so that one could actually see where the scalp had previously shown lesions.

DR. ABRAMOWITZ: I have treated thirteen children with ringworm of the scalp with thallium acetate. In general, the results are fairly consistent, but great care must be exercised in determining the weight and the proper dosage. In two brothers severe pains developed in the extremities; the older boy, about 7 years old, was unable to walk for three weeks. Beyond puberty, this medication is toxic and, so far as is known today, seems to be contraindicated. I doubt whether this drug will replace roentgen-ray treatment of ringworm of the scalp, excepting when for some good reason the roentgen ray cannot be used. Years ago, thallium was prescribed for night sweats in tuberculosis, in dysentery and also for irrigation of the bladder, but its use had to be discontinued on account of toxic symptoms. The therapeutic and toxic doses of this remedy are extremely near each other. A patient should not be given thallium if he has any kind of disease of the kidney.

DR. GOODMAN: This morning I learned of a patient who was given a full dose of thallium acetate for ringworm of the scalp, and who had three days previously been given an epilating dose of roentgen rays at another institution. The outcome should be interesting. Apparently, the roentgenologist did not impress the parents sufficiently, as they denied that any treatment had been given when questioned by the second physician before giving the thallium acetate. Of course, partial doses of thallium acetate and fractional epilating doses of roentgen ray have been given in the past, but I do not know of any reported instance of full doses of each given at such short interval. It is of interest, also, that thallium acetate has been recommended for local use in hypertrichosis. If this is efficacious, it confuses the idea of the nerve origin of the alopecia following the oral administration of the thallium.

DR. LANE: I should like to know whether those who have had experience with it consider the approach of puberty as an absolute contraindication for the use of thallium for epilation.

DR. PAROUNAGIAN: Last summer I had the pleasure of meeting Professor Buschke, who demonstrated a number of these cases at the Rudolf Virchow Krankenhaus in Berlin, and he distinctly stated that this drug is dangerous in adults and strongly advised against its use.

SCLERODERMA. Presented by DR. CORNELL for DR. LEWIS.

T. P., a woman, aged 47, from the New York Post-Graduate Skin Clinic, born in Italy, about a year and a half before presentation noticed over the right big toe a patch about the size of a nickel in which the skin was yellowish and hard; the toe was stiff and could not be bent easily. In the course of two or three months, a number of other lesions appeared on both lower extremities and on the abdomen.

In September, 1927, the patient appeared at the Skin Clinic, and examination showed many different sized lesions, mostly on the lower extremities and the abdomen. They were sharply defined, irregular in outline, smooth, hard and rigid, and the skin was bound down to the underlying tissues. The color varied from a dull white to a yellowish white. Some were wrinkled and uniform in color; others were mottled or blotchy in appearance. The lesion on the right toe grew larger and extended up on the instep for about 4 inches (10.16 cm.) and became ulcerated. Over the upper part of the back, there was a large patch of the guttate variety in which the lesions were the size of a pea, smooth, shiny, white macules, grouped and confluent. In this location, the lesions were not so indurated or leathery.

A microscopic study showed that the bundles of connective tissue throughout the entire cutis had a tendency to be somewhat wavy and to be arranged parallel to the epidermis. In the middle and deep cutis, there were groups of bundles dense and more deeply stained than the rest of the collagen. In the upper cutis, just beneath the epidermis, there was some dissociation of the bundles, which were faintly stained. The blood vessels were few in number, and the papillary bodies

were entirely absent. There was an almost total disappearance of the nuclei of the connective tissue; only a few coil glands were present in the deeper cutis; the epidermis was thinned and flattened and the rete pegs were entirely effaced.

A Case for Diagnosis. (Dermatitis Factitia?). Presented by Dr. Rosen.

W. M., a man, aged 68, from the Skin Clinic of the New York Post-Graduate Hospital, was born in this country. The eruption had started four months before presentation on the chin, and shortly spread to other parts of the body. The patient gave a history of having had a "rupture of the left eyeball" two years previously. On both buttocks and on the lower part of the arms were round, irregular, crusted lesions from the size of a pea to the size of a walnut, with an erythematous base. They were covered with a thick black crust. There was not any itching, exudation or history of the ingestion of any medicine before the eruption appeared. The urinalysis and the Wassermann reaction of the blood were negative. On account of the artificial appearance of the eruption, the diagnosis of dermatitis arterfacta was considered.

DISCUSSION

Dr. Rostenberg: This patient consulted the Bronx Hospital Clinic about three or four months before presentation for an ulceration on the chin which looked like an epithelioma or gumma. The Wassermann test was negative. He also had a hemorrhagic lesion back of the cornea of the left eye. His body at that time was free from eruption. He disappeared after a few weeks of observation before a definite diagnosis was established. In view of the previous condition, my impression tonight makes me think of the probability of pemphigus.

Dr. Wise: I agree with the diagnosis of dermatitis arterfacta or neurotic excoriations. In a conversation with the patient, it was evident that he was delighted to have the lesions. He tells every one that he would like to find out what is the matter with him and he presents a picture very like those shown by Dr. MacKee in an article published some years ago in the Archives of Dermatology and Syphilology.

Dr. Eller: The diagnosis of maligning was suggested because the lesions looked as if they had been artifically produced, and also because they did not resemble any definite disease of the skin.

Maculo-Anesthetic Leprosy. Presented by Dr. Cannon.

C. C., a woman, aged 69, a housewife, born in Italy, had been in this country for twenty-two years. She was first seen in the Vanderbilt Clinic on Feb. 23, 1928, with a diffuse eruption scattered over most of the body. She stated that the condition started while in New York State fifteen years previously, on the lower part of the left leg; and that a short while after that similar lesions developed on the lower part of the right leg, and then gradually spread over the rest of the body. The lesions on the trunk had been symptom-free, but during the past two years the patient had been troubled with burning and drawing sensations in the hands and feet. Six months prior to presentation, she had had three injections in the arm, given at the Neurological Hospital, but she did not return for further treatment. A short while afterward she was informed by the Board of Health that she would have to go to some hospital for treatment.

Examination showed numerous erythematous patches scattered all over the body; these were irregular in outline and varied from the palm of the hand to a dinner plate in size. The margins were yellowish brown and slightly infiltrated, while the skin in the center of the lesions appeared slightly paler than normal and in some areas showed apparent superficial atrophy. There was atrophy of the interosseous muscles between the thumb and index finger of the left hand. The face showed a rather sharply defined erythematous patch on both cheeks. On

the right eyeball, there was a pterygium-like lesion. There were numerous scars on both hands and wrists as a result of superficial burns. The lesions were anesthetic.

DISCUSSION

DR. FEIT: I have seen patients at the Skin and Cancer Hospital who were treated with antimony-arsphenamine, a preparation made by Dr. C. N. Myers. The lesions disappeared, and the patients could move their fingers in a short time. Similar treatment was employed by Cawston in Europe, whose patients were given organic antimony and improved considerably.

LUPUS PERNIO IN A PSORIATIC PATIENT. Presented by DR. FEIT.

J. W., aged 50, born in Russia, from the service of Dr. Throne, New York Skin and Cancer Hospital, said that he had never before been sick. There was not any history of tuberculosis in the family. He said that the condition started five years previously with a frost-bitten nose and right ear. There was an eruption on the cheek of five months' duration; it consisted of a rather circumscribed plaque-like infiltration reaching down in the subcutis, the margin being slightly elevated, and the center more depressed; it was about the size of a silver dollar. The nose was cyanotic and bluish red, as was also the lobe of the right ear. Biopsy was not permitted. The patient had received two injections of a gold compound.

In reply to several questions, Dr. Feit said that the man had psoriasis in addition to lupus pernio. Friboes makes a distinction between chilblain lupus, which is considered as lupus erythematosus, and lupus pernio which is lupus vulgaris.

LUPUS VULGARIS ERYTHEMATOIDES. Presented by DR. FEIT.

C. G., an Italian, aged 34, from the service of Dr. Throne, Skin and Cancer Hospital, said that the condition was of eight years' duration; he had never before been sick, and did not give a history of tuberculosis. His father had died of pneumonia; his mother was living and well.

On the left ala nasi were grouped nodules showing hyperkeratosis; there were also patulous follicles. On diascopy, yellowish red spots were seen. The eruption was scaly. The results of the physical examination were negative.

TUBERCULOSIS ULCEROSA MUCOSA ORIS. Presented by DR. ANDREWS.

L. L., a white houseworker, age 31, born in this country, was first seen in the Vanderbilt Clinic on Feb. 20, 1928, because of an ulcer on the left side of the mouth. Two months prior to coming to the clinic, an upper left molar tooth which had become loose was extracted, and following this the ulcer had appeared. She had been married fourteen years, had had two children and three miscarriages. She had been hoarse for about a year. On the mucous membrane of the left side of the mouth, in a position corresponding to the upper molars, there was a deep crateriform ulceration apparently perforating into the antrum. It was covered with a superficial moist membrane. Around this ulceration and extending out on the palate, there was a more superficial erosion covered with irregular granulation tissue and having a slightly undermined border. The Wassermann reaction was negative.

ACTINOMYCOSIS. Presented by DR. HOPKINS.

W. L., a man, aged 22, a furrier, born in this country, was referred to the Vanderbilt Clinic by Dr. Max Baruch of the Department of Surgery, with the history that in September, 1927, a swelling had developed on the cutaneous surface of the left cheek at the level of the lower teeth. This discharged a small amount of pus and healed; then another small swelling appeared beneath it. The inflammation gradually extended. It was incised repeatedly, without improvement. The patient worked in fur but had never handled cowhide; he had

worked on a farm in 1922, but did not have care of the livestock. He had not had any trouble with his teeth. Examination showed a swelling in the left cheek, firmly adherent to the lower jaw and overlying skin, about 5 by 8 cm. in diameter. There was not any pain and practically no tenderness on pressure. There were four or five sinuses from which a small amount of bloody pus discharged. At the posterior end of the swelling there was a deep fluctuating area; the rest of the mass was stony hard. The Wassermann test and Kahn test were strongly positive. The blood count was negative except for a slight secondary anemia. Roentgen-ray examination showed a slight rarefaction at the apex of the posterior molar tooth. Two biopsies showed only nonspecific granulation tissue. Pus contained sulphur-yellow granules which microscopically revealed a typical club formation of actinomyces.

PIGMENTATION FOLLOWING ARSPHENAMINE DERMATITIS. Presented by DR. CANNON.

H. B., a colored woman, born in this country, had been married twice, the first time twenty years previously. She had had two miscarriages by her first husband. She developed left-sided paralysis fourteen months before coming to the Vanderbilt Clinic. The Wassermann test at that time had been 4 plus. She was given ten treatments with neoarsphenamine, the last in July, 1927. There was a scant dermatitis after the ninth injection, and a marked generalized dermatitis following the tenth injection. The eruption disappeared after about three months, leaving a deep pigmentation of the skin, which had remained for six months. Examination showed marked, discrete and confluent macular, dark brown to blackish pigmented areas over the skin of the entire body, extremities and lips. Colored areas of normal skin were conspicuous on account of their brighter color. The hair was thin, especially on the top of the head.

LEUKODERMA SYPHILITICUM. Presented by DR. PAROUNAGIAN.

G. B., a man, who had a meatal sore five months previously, applied to the Bellevue Syphilis Clinic, on account of losing his hair during a period of two months. Examination revealed a marked syphilitic alopecia, leukoderma syphiliticum, fading macular rash and a scar at the meatus. He had had only local treatment. His hearing was poor in the right ear. A Wassermann examination, made elsewhere on Feb. 20, 1928, gave a 4 plus reaction.

PIGMENTARY SYPHILID OF THE CHIN. Presented by DR. PAROUNAGIAN.

A. J., a negress, aged 19, single, presented herself at the Bellevue Clinic on Feb. 29, 1928, with condylomas about the genitalia, a generalized fading roseola, general adenopathy and markedly pigmented maculopapular lesions about the chin and mouth — slightly so on the forehead. The Wassermann examination showed a 4 plus reaction. This case differed from Trimble's "mottled chin" on account of the deep pigmentation and papular lesions with a tendency to form annular lesions. The duration of the genital lesions was said to be three weeks, and that of the lesions of the chin, two weeks.

LEPTOTHRIX (TRICHOMYCOSIS NODOSA). Presented by DR. FEIT.

The patient was an Italian, aged 37, from the Vanderbilt Clinic, and the condition was of unknown duration. He presented a peculiar nodular lesion of the hairs in the axillae, the color of the concretions being red; the sweat was also red.

These concretions were caused by a parasitic growth, similar to the chitin mass found in pediculosis capitis. Castellani described different varieties.

Dr. Feit remarked that all the cases he had seen had occurred in red-haired persons.

PITTSBURGH DERMATOLOGICAL SOCIETY

Regular Meeting, March 15, 1928

L. G. BEINHAUER, M.D., *Chairman, Presiding*

TULAREMIA. Presented by DR. F. AMSHELL.

S. G., a man, aged 20, was first seen on Dec. 24, 1927. While dressing rabbits he cut himself on the dorsum of the right middle finger, over the second phalangeal joint, with a spicule of bone. The wound bled, and in a few days became infected. About ten days later, a second area of infection was observed on the ulnar surface of the right palm in the crease caused by the flexion of the fingers. When first seen, the two infected areas on the right hand had healed with resulting smooth cicatrices. There was a large, red, painful gland about the size of a hen's egg in the right axilla. There was no fluctuation on palpation, and the patient was advised to apply hot boric acid dressings constantly. A specimen of blood was sent to the hospital, and it showed agglutination with a suspension of *Bacterium tularense* in a dilution of 1 : 1280. The patient also had an alopecia areata which appeared about two weeks after he cut himself. While the enlarged axillary gland was soft, it was incised, and a large quantity of yellow, purulent secretion exuded. Mixed in with the purulent secretion was a flocculent curdy material. The gland was packed with a gauze drain saturated with solution of chlorinated soda. This drain was removed every day and a new one inserted with the result that the gland had diminished in size. During all this time the patient felt perfectly well and never showed any elevation in temperature. The day before presentation a lymphangitis of the right arm developed, and the patient was sent to the hospital for further treatment.

DISCUSSION

DR. AMSHELL: After a period of two or three weeks bacteria are not usually found in the secretion obtained from the enlarged glands. None was found in the secretion in this case. There are two types of tularemia, one a systemic type and the other a purely glandular type which may or may not be accompanied by fever. In this case the patient did not have a fever.

MACULAR ATROPHY. Presented by DR. PHILLIPS.

G. T., a woman, aged 20, a glass factory worker, presented over the chest, back and shoulders, areas of a shiny, atrophic appearance of the skin which appeared about two years previous to presentation and which was not preceded by eruption or symptoms of any kind.

DISCUSSION

DR. AMSHELL: When I first saw this patient I thought of a guttate morphia, lichen sclerosis et atrophicus and macular atrophy. On closer examination the first two diagnoses were ruled out. I think this is a case of macular atrophy of unknown origin.

DR. GOLDMAN: I favor white spot disease as the diagnosis.

A CASE FOR DIAGNOSIS. Presented by DR. BUSMAN.

Mary Elizabeth H., aged 7 months, presented a universal, intense exfoliation with mottled areas of erythema. The skin was thin and flexible, but uniformly covered with a fine, flaky, whitish, dry scale, particularly abundant over the trunk.

The condition began when the patient was 2 months of age and has gradually spread. The patient was breast fed, and her general nutrition was fair. There was no history of the ingestion of drugs, and only olive oil had been used externally.

DISCUSSION

DR. AMSHELL: I think this is a case of Leiner's disease. There is a generalized desquamation, and on the scalp and eyebrows yellow crusts suggestive of a seborrheic dermatitis are seen.

DR. GOLDMAN: I believe this to be a case of seborrheic dermatitis. Ritter's disease begins during the first and second week of life and begins with an erythema which later becomes crusty and scaly. The children either die soon after the onset or recover within a few weeks. The onset of this case was six months previous to presentation. The scale on the head resembles a seborrheic dermatitis.

PEMPHIGUS VULGARIS. Presented by DR. GUY and DR. JACOB.

A woman, aged 22, born in the United States, presented a bullous eruption on the arms, neck, face and chest. A few lesions also were present in the mouth. The bullae appeared on a noninflammatory base. The eruption was of one month's duration. The patient had been given a direct transfusion of 600 cc. of whole blood with marked improvement.

DISCUSSION

DR. GOLDMAN: I saw this patient about a week prior to presentation before she received the transfusion, and the odor was apparent. The odor has disappeared entirely.

TINEA CAPITIS (TREATED WITH THALLIUM ACETATE). Presented by DR. GOLDMAN. (From the University Dispensary.)

H. W., a colored boy, aged 5, when first seen, presented several areas of alopecia on the top of his head. These areas were slightly scaly and showed broken stumps of hair. Several hairs were examined under the microscope after the patient had been treated with 40 per cent potassium hydroxide, and showed the presence of an endospore. The boy weighed 37.5 pounds (17 Kg.) and on Feb. 18, 1928, was given 0.136 Gm. of thallium acetate, the equivalent of 0.008 Gm. per kilogram of body weight. The father stated that the hair began to fall out about fourteen days after the administration of the drug.

DISCUSSION

DR. GUY: In some cases the patients have been shown to respond by complete depilation when much smaller doses of thallium acetate were used supplemented by the application of 0.5 unit roentgen ray applied by the Adamson-Kienback technic. Animal experimentation was being started by Dr. Goldman at the same time that all clinical patients were being treated with thallium. Safety was the factor to be determined.

DR. GOLDMAN: The after-treatment is the same as that after epilation with roentgen ray. Most of the toxic effects after the use of this drug occur about the age of puberty. So far none of our patients have shown any ill effects.

DERMATITIS MEDICAMENTOSA-PHENOLPHTHALEIN. Presented by DR. H. G. WERTHEIMER.

M. F., a married woman, aged 45, gave a history of taking feenamint gum as a laxative. On the neck, forearms and back were brownish-purple macular lesions, varying in size from that of a large pea to several inches in diameter.

XANTHOMA TUBEROSUM MULTIPLEX. Presented by DR. H. G. WERTHEIMER.

S. P., a boy, aged 9 months, for the past six months presented many round, yellowish nodules, varying in size from that of a pinhead to that of a split pea. Their consistency was somewhat firm. These brownish-yellow and reddish nodules

occurred for the most part on the head and upper part of the body. The extremities, hands and feet were not affected. When seen about ten days later, the lesions were practically all yellow. A biopsy was taken and the diagnosis was confirmed.

CONGENITAL ALOPECIA. Presented by DR. HOLLANDER.

R. M., a boy, aged 6, presented a fairly well generalized alopecia affecting principally the parietal areas. Here the scalp was studded with occasional protruding hairs. These were dry and thin and showed evidence of splitting; occasionally more than one hair seemed to be protruding from a hair follicle. The scalp itself showed a great deal of atrophy. Evidences of keratosis pilaris could be seen throughout the scalp. The hair was also rudimentary about the eyebrows. Tears did not appear when the child cried. A marked keratosis pilaris existed over the arms and legs. The left testis was undescended.

Roentgen-ray studies showed negative observations of the thymus and sella turcica, although the latter was small. The laboratory observations were negative.

DISCUSSION

DR. GUY: If this is a congenital alopecia, it is an extremely rare case because it would necessarily agree clinically with the type of case described by Schede in which hair follicles were congenitally absent. The other type usually presented a granular surface with a lanugo type hair at or soon after birth, with a familial tendency, and some hair of normal type frequently appeared at or after puberty. In this case there is some atrophic scarring, a folliculitis of scattered hair follicles and a low grade inflammatory reaction just beyond the area of atrophic scarring. Folliculitis, decalvans and favus should be ruled out. All other features are certainly suggestive of the diagnosis as presented.

G. J. BUSMAN, Secretary.

BROOKLYN DERMATOLOGICAL SOCIETY

E. ALMORE GAUVAIN, M.D., *Secretary*

Regular Meeting, March 19, 1928

LOUIS CHARGIN, M.D., *President*

LICHEN PLANUS. Presented by DR. WALZER.

D. D., a porter, aged 40, the father of five children, did not give a history of venereal disease in himself or in his wife.

For five months prior to presentation he had had an eruption which had begun on the sides of the face and in the mouth. Four weeks after onset, it had also involved the scrotum and the pubic region.

The primary lesion was a flat, shiny, red, slightly elevated papule the size of a pea. The lesions were scattered and in groups, without any tendency to definite arrangement, except on the scrotum and pubes where there was a tendency to semi-annular formation. On the forehead and cheeks, the lesions were in patches, and the individuality of the primary lesion was no longer present. There was slight exfoliation on the scrotal lesions. On the mucous membrane of the left cheek were numerous scattered, tiny, gray, elevated points.

Lesions were not noted on other parts of the body. The Wassermann reaction of the blood was negative.

DISCUSSION

DR. ABRAMOWITZ: This is an extremely interesting case. I would never think of lichen planus. It seems to me that the eruption has been considerably

modified by some local treatment. One frequently sees dermatoses in a quiescent stage assuming a shiny papular appearance that resembles lichen planus. I cannot help but think of seborrheic dermatitis.

DR. GRAHAM: I do not accept the diagnosis of lichen planus. The patient told me that the eruption disappeared at times. If this is correct, I would think of erythema multiforme.

DR. RULISON: I would be inclined to accept the diagnosis of seborrheic dermatitis in this instance. I do not believe that it is lichen planus. The distribution of the lesions is unusual for lichen planus. The lesions on the genitalia are not what one would expect to find in lichen planus.

DR. WALZER: Sarcoid can be ruled out by the lack of infiltration and by the fact that the scrotal lesions are flat and annular. Furthermore, the lesions of the mouth are not sarcoid. As to seborrheic dermatitis, how would one account for the lesions of the mouth? Multiforme erythema is at present applied to so many different and unrelated manifestations, it is difficult to consider that diagnosis. For multiforme erythema to appear in such sharply outlined lesions with whitish points in the mouth is not the rule. Some of the lesions on the face would suggest syphilis, but on the other hand, many of the lesions, especially those on the forehead, certainly are not syphilitic.

Considering all these possible diagnoses, I think that lichen planus is the most plausible one, this being especially emphasized by the scrotal lesions and the lesions of the mouth.

DERMATITIS MEDICAMENTOSA (PHENOLPHTHALEIN AND IODINE). Presented by DR. WALZER.

S. B., a boy, aged 7, six weeks before presentation was given phenolphthalein (ex-lax) and a cough mixture for a cold. The next day an eruption occurred on the legs, arms, buttocks, tongue and elsewhere in the mouth. When presented the lesions were on the ears and the extremities. They consisted of erythematous macules scattered over the upper and lower extremities, which were of various sizes and shapes, and many of them showed brownish pigmentation. Scattered through these erythematous lesions and also on the rims of the ears were papules and nodules, many with cribriform surfaces, on which many small pustules and hemorrhages were visible.

DISCUSSION

DR. BEST: I think that the condition is an iodide rash.

DR. ABRAMOWITZ: I think that this child has only an iodide rash. The presence of the lesions on the extremities and the bullous and hemorrhagic elements are the points in favor of such a diagnosis. The child has been taking hydriodic acid and "cincophen," and it is possible that some of the eruption is due to these drugs. Even though some laxative containing phenolphahtlein was also given the child, I see no evidence of a rash caused by the drug. I am not acquainted with symmetrical bullous and hemorrhagic lesions produced by phenolphthalein. The history is of slight value in this case. After all signs of the eruption are gone, a test dose of the iodides, later "cincophen," and then phenolphthalein will show which drugs are responsible. I hope that Dr. Walzer will try this and report at the next meeting.

DR. WALZER: In regard to rashes caused by drugs one cannot say that any particular type of rash is due to any one specific drug with the possible exception of iodides and bromides. Phenolphthalein will produce many types of eruptions: erythematous, urticarial, bullous and hemorrhagic.

I saw a severe bullous phenolphthalein eruption in a young man about 22 years of age. The bullae were surrounded by erythema. The eruption involved the mouth and genitalia especially, but was also present on the extremities and trunk. The eruption disappeared and did not develop again until he took more of the drug. This happened three times.

As regards the present case, there is no question of the iodide eruption. But there is also present an erythematous eruption scattered between the iodide papules. The mother said that this erythematous eruption was present before the ingestion of any medicine other than phenolphthalein.

A Case for Diagnosis (Dermatitis Herpetiformis?). Presented by Dr. Gauvain.

M. I., a boy, aged 3½ years, had an eruption which began six months before presentation. At first there was an erythema over the entire body with considerable itching. Shortly afterward, small pustules developed. About two months later, the lesions started to improve but never entirely disappeared. For three months before presentation, the lesions had been increasing again and bullae had appeared as part of the picture. The patient had no history of previous illness except a generalized erythema of forty-eight hours' duration when he was 5 months old. There were two older children, aged 6 and 8 years, in the family, who were free from any disease of the skin.

When presented, there were papules and pustules on the extremities, particularly between the fingers and toes, and on the wrists. The cheeks, forehead, chin and back of the neck were involved with similar lesions. On the trunks, there were scattered areas of small papules and pustules. In addition to these, there were many bullae on the hands and feet ranging in size up to that of a hickory nut. These bullae were tense, but ruptured after being present for two or three days, leaving crusts and scales that soon disappeared.

DISCUSSION

Dr. Abramowitz: I would be inclined to consider it as dermatitis herpetiformis. It would be interesting to know if the child had received injections of serum or vaccine at any time. Pemphigoid eruptions occur in children at times following the introduction of foreign proteins, and I would suggest that that part of the history be looked into; also, that examination of the bullae be made for eosinophils. If necessary, give the child the potassium iodide test and see what happens. If the eruption becomes worse, then it would be dermatitis herptiformis.

Dr. Walzer: I do not think that it is dermatitis herpetiformis. It is only of six months' duration and I would hesitate to make the diagnosis of dermatitis herpetiformis on the first attack. To my mind, it is urticaria.

Dr. Best: I would think of dermatitis herpetiformis. I saw a similar case several years ago. The patient was of the same age and had several attacks. The diagnosis of dermatitis herpetiformis was confirmed by the late Dr. Winfield.

Dr. Graham: I have seen this boy for two or three weeks. Dermatitis herpetiformis has been discussed at some length, without a decision being reached as yet. The bullae are large, and while I do not know that such large bullae cannot occur in dermatitis herpetiformis, I have never seen such an occurrence.

Dr. Rulison: I saw some bullae, the lesions had a tendency to grouping, and I was inclined to think this a case of dermatitis herpetiformis.

Lupus Erythematosus (Showing Results of Treatment). Presented by Dr. Gauvain.

J. F., an unmarried man, aged 28, had typical discoid lupus erythematosus with numerous lesions on the face and scalp, ranging in size from a dime to a silver dollar. The areas of the scalp were bald. He had received ten injections, totaling 950 mg. of a gold compound, up to the middle of January, 1928, at which time the lesions were practically gone except for some erythema. Since then he had received four more injections of a gold compound, each of 100 mg., with the result that all scaling had disappeared, the hair was regrowing on the scalp, and only a faint erythema with a few papules marked the previous location on the face.

COMBINED THALLIUM AND ROENTGEN-RAY TREATMENT FOR TINEA CAPITIS. Presented by DR. ABRAMOWITZ. (From the New York Post Graduate Skin Clinic.)

T. T., a boy, aged 9 years, of Irish parentage, presented two patches of ringworm of the scalp the size of a dollar. The lesions were typical of ringworm. Several microscopic examinations and three cultures, however, were negative. He received one half of an epilating dose of the roentgen ray to the entire scalp and 4 mg. of thallium acetate per kilogram of body weight. Seventeen days later epilation began but it was never complete. The hairs in the affected areas had not regrown two months after the treatment.

THALLIUM EPILATION FOR TINEA CAPITIS (2 CASES). Presented by Dr. ABRAMOWITZ. (From the Skin Clinic, New York Post Graduate Hospital.)

F. O'S., a girl, aged 5½ years, of English parents, had tinea of the scalp of three months' duration. Cultures were positive. She received 7 mg. of thallium acetate per kilogram of body weight, four hours after lunch. Epilation began on the seventh day. There were no general symptoms. Epilation was completed on the nineteenth day. Regrowth began on the twenty-eighth day. Antiseptic treatment consisted of iodine (10 per cent) in grease, soap and water washings and an adhesive cap. Photographs showed the scalp before and after the administration of thallium acetate.

J. C., a boy, aged 8½ years, of Italian parents, had tinea capitis of fifteen months' duration. Spores were found. He received 7 mg. of thallium acetate per kilogram of body weight. The total dose was 109 mg., which he received in one treatment, was given by mouth, mixed with a little sugar and milk in a cup of cold water, about three hours after lunch. Epilation began sixteen days later, but was not complete. Regrowth began almost at once. The new hairs were darker, and appeared as small islands on the scalp.

DETROIT DERMATOLOGICAL SOCIETY

H. J. PARKHURST, M.D., *Reporter*

Regular Meeting, March 20, 1928

H. S. BARTHOLOMEW, M.D., *Presiding*

LUPUS ERYTHEMATOSUS; HEALED EPITHELIOMA. Presented by DR. HASLEY.

A man, aged 64, had first noticed a small lesion on the right side of his forehead in December, 1926. Within a year, it had become a large coin-sized ulcer. The lesion had healed after intensive roentgen-ray treatment, and a subsequent folliculitis of the right cheek had also yielded to roentgen-ray treatment. There were several erythematous scaling patches on the face and signs of an old focus of pulmonary tuberculosis.

FIBROMATOSIS. Presented by DR. SCHILLER and DR. SCHLEGELMILCH.

B. R., a Polish Jew, aged 28, a hat maker, had first noticed a nodule on the right arm one and a half years before presentation; the nodule had persisted. There were three other nodules, varying from the size of a cherry to that of a plum, on the right forearm, four on the left arm, three on the anterior surface of the left thigh and two on the abdomen. These protuberances were irregularly nodular and fairly hard, and a few seemed adherent to the overlying skin. Several Wassermann reactions of the blood had been negative.

ERYTHEMA FIGURATUM PERSTANS. Presented by DR. SHAFFER.

E. S., an Englishman, aged 37, had had grouped erythematous papular lesions on the left cheek, neck and back for six months. Some had disappeared after a few weeks, leaving no trace, and new lesions had appeared in the same areas. The lesions were purplish red, with a tendency to annular and arciform configuration, and were superficially infiltrated and slightly scaly. There was slight pruritus. There was a tendency to central involution and recent lesions presented a crinkling appearance at the center, with scaling, suggesting superficial bullae which had undergone involution. Active bullae were not found. Over the right deltoid region the groups were 20 cm. in diameter. The teeth were a suspected focus of infection. The Wassermann reaction of the blood was negative. The patient had not taken medicine.

DISCUSSION

DR. JAMIESON: I agree with the diagnosis.

DR. PARKHURST: I also agree with the diagnosis.

DR. KEIM: Did this condition ever seem suggestive of granuloma annulare?

DR. SHAFFER: I shall try to obtain a biopsy.

A CASE FOR DIAGNOSIS: GRANULOMA, SYPHILITIC OR TUBERCULOUS (?). Presented by DR. SCHILLER and DR. SCHLEGELMILCH.

F. S., a man, aged 33, whose first wife was said to have died from pulmonary tuberculosis, had first noticed a medium coin-sized eruption on the left buttock four years prior to presentation. It had gradually enlarged to a diameter of 25 cm. The center was relatively clear, and about the border were groups of small nodules. The eruption was deep red. An appearance suggestive of apple jelly nodules was seen under the diascope. A provocative Wassermann reaction was negative. Some improvement had followed the repeated injection of neoarsphenamine.

DISCUSSION

DR. SHAFFER: Slow response to the administration of arsphenamine does not necessarily indicate syphilis, for some tuberculous lesions respond to it.

DR. JAMIESON: It is my impression that the process is tuberculous.

SECONDARY SYPHILID RECURRING AFTER PROLONGED TREATMENT. Presented by DR. SHAFFER.

A young man had had a chancre in 1924. Three weeks later, the Wassermann reaction had become positive; a secondary eruption, however, had not occurred. Eighteen injections of arsphenamine and six injections of mercury were given at Ann Arbor, followed by eighty mercurial rubs. On an examination at the Harper Hospital in Detroit, in May, 1927, the Wassermann reaction was found to be negative. Twelve injections of 0.6 Gm. of neoarsphenamine were given, and twenty-four of mercuric salicylate (1 grain or 0.065 Gm. each). When the patient returned in February, 1928, there was a strongly positive Wassermann reaction. There were annular lesions on the scrotum and mucous patches on the lips, tongue and buccal mucosa.

DISCUSSION

DR. VALADE: Is there a possibility of reinfection in this case?

DR. SHAFFER: Apparently not.

PITYRIASIS ROSEA IN A NEGRO. Presented by DR. JAMIESON.

W. W., a negro, aged 29, had had a pruritic eruption for two weeks. The trunk was involved, but the eruption was distributed chiefly over the flanks, back and lower axillary areas; the lesions were rounded and oval, slightly elevated and

scaly. Over the right scapula was a patch 8 cm. long and 5 cm. wide, apparently the herald patch. There were some scattered lesions on the upper arms and thighs. The color of the lesions was completely masked by the pigment of the skin.

Bromoderma in a Negro. Presented by Dr. Jamieson.

J. J. presented a patch of vegetative dermatitis on the left cheek. It was said to have followed trauma. The patient had taken bromides.

DISCUSSION

Dr. Jamieson: The lesion was said to have appeared after the patient had tried to squeeze something out of the skin. The vegetations followed.

Dr. Shaffer: The lesion was verrucous and elevated 0.5 cm. It was apparently a case of bromoderma.

Dermatosis Industrialis (?) in a Tire Builder. Presented by Dr. Jamieson.

W. B., aged 35, presented lesions of various types on the palms, forearms and forehead, of three months' duration. The palms were markedly hyperkeratotic and painful on pressure. There was no pruritus. The lesions on the forearms were reddish, blotchy and irregular in size and shape, with a furfuraceous scale; they were pruritic. On the forehead were ill defined erythematous and pigmented areas, which were said to have been caused by applications of iodine. Other workers in the same factory complained of similar lesions on the hands, which were considered to be of occupational origin, in spite of the fact that this particular patient had had the same occupation for thirteen years. The lesions on the forearm suggested dermatophytosis. (The patient, on later examination, said that the lesions on the forearms had disappeared when Whitfield's ointment was applied, and that the palmar lesions had improved greatly.)

Psoriasis in a Negro. Presented by Dr. Valade.

W. W., a boy, aged 13, presented scaling patches of long duration on the knees, on the anterior surface of the legs, in the right axilla and on the scalp. There was pitting of the right thumbnail. Some of the patches were sharply outlined and some were not. Mycelia or spores had not been found in scrapings from the lesions.

Dermatitis Factitia. Presented by Dr. Valade.

C. B., a boy, aged 13, an inmate of the Detroit Detention Home, presented a peculiar cross-hatched arrangement of linear scars on the inner and anterior part of the upper part of the left thigh. The scars seemed to extend from three irregular coin-sized erythematous, slightly scaling patches. The patient said that he had not inflicted the lesions.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, March 21, 1928

Francis Eugene Senear, M.D., *President, Presiding*

A Case for Diagnosis. Presented by Dr. Mitchell.

A man, aged 47, was first seen at the Lutheran Memorial Hospital on Feb. 9, 1928, with the history of a gradual onset of nonpruritic erythematous patches on the scalp, face, neck, back, hands, knees and ankles. The disorder began in the autumn of 1927, and since that time he had been taking medicine of an unknown

composition. The physician who had treated him had refused to divulge the nature of the drug. The erythematous areas were bright red and sharply defined. A conspicious feature was the bandlike areas on the dorsal surfaces of the fingers, stopping short at about the same point on the dorsum of the hands. Results of the physical examination was completely negative, as were all the laboratory tests. The temperature varied but never reached more than about 100 F. The blood count was approximately normal, as was the basal metabolism. The internist at the hospital had failed to find any visceral disturbance of any kind. The patient complained of great weakness, and was unable to stand or walk for any distance. He was perfectly comfortable while sitting. During his stay in the hospital he was put on a salt-free diet, and rapidly developed an edema of the extremities. When this was discontinued, the edema improved. He had a number of infected teeth, which had not yet been removed. The diagnosis of disseminated lupus erythematosus had been considered.

DISCUSSION

DR. FOERSTER: The impression I have is that of a man who is seriously ill of a toxemia. The whole picture, systemic as well as in its cutaneous manifestations, I think is that of an acute disseminated lupus erythematosus. The points of value in the diagnosis were: the peculiar pinkish-blue tints in some of the lesions; the marked engorgement and edema found in others, and the distribution, as shown on the dorsum of the hands and about the nail folds.

DR. FINNERUD: Within the last few months, Dr. Oliver and I have had two cases at the Cook County Hospital much like this. Both of them occurred in young women; the condition in both was more marked on the face and exhibited more extensive involvement of the mouth. After several weeks' observation they developed still higher degrees of temperature, 104 to 105 F., and died. Although we considered these to be cases of acute disseminated lupus erythematosus, we were not certain of the diagnosis, thinking that they might be examples of severe toxic dermatitis of other nature. We were unable to get permission to perform an autopsy in either instance.

DR. MITCHELL: When I first saw this patient in consultation, I made a note of toxic dermatitis of undetermined origin and recommended various procedures, among others the extraction of teeth and elimination of the tonsils. This was not done for reasons known only to the attending physician. The patient was put on a salt-free diet on orders of the attending physician and developed so much edema that I was loath to start any operative work. On normal diet, he improved considerably. I have had an experience recently with the exanthematic type of lupus in the case of a young woman, who in two months rapidly grew progressively worse and died. Before death she had a streptococcus invasion of the blood stream. I could not find any streptococci in the blood of this patient. I think that all infections should be eliminated and then gold and sodium thiosulphate be given.

DR. FOERSTER: A good many years ago I showed a young girl before this Society with an isolated patch of what I considered lupus erythematosus on the lip. The case created a good deal of discussion, but the diagnosis of an isolated mucous membrane lesion of lupus erythematosus was accepted. The patient was not seen again by me until a short time ago, at which time she had developed an acute lupus erythematosus which ended fatally in less than ten days, after she had had the single lesion for many years.

DR. MITCHELL: I have a patient under observation at the dispensary who has a solitary lesion of the lower lip of the same type, but he may develop this type of cutaneous lesion later.

NEUROTIC EXCORIATIONS. Presented by DR. SENEAR.

A woman, aged 40, who was pregnant, had an eruption over the arms, shoulders and legs of two months' duration. The lesions consisted of what were apparently simple excoriations. She said that the first symptom noted was itching, and that the lesions appeared only after she had scratched the skin severely.

DISCUSSION

DR. PARKHURST: The symmetrical distribution of the lesions, which seemed to be crusted papules, was rather against the diagnosis of neurotic excoriations. The distribution was not out of line with a chronic papular urticaria or with an eruption produced by bromide, and the history was somewhat suggestive of the latter.

DR. HEDGE: I thought of an eruption caused by bromides, but believed the pruritus was a little too marked. The diagnosis of prurigo nodularis occurred to me.

DR. H. R. FOERSTER: The condition impressed me as being a dermatitis factitia.

DR. SENEAR: Dr. Oliver saw this patient with me and we considered neurotic excoriations, folliclis and dermatitis herpetiformis. There was a somewhat suggestive grouping, and she was clear in her statement that the itching preceded the eruption. She had taken bromides for about a week, but had discontinued them a month before the eruption had appeared.

SPOROTRICHOSIS. Presented by DR. MITCHELL.

A woman, aged 76, was first seen on March 8, 1928, at which time a group of lesions were present on the outer margin of the dorsum of the right hand and on the wrist. The lesions began in September, 1927. The patient had been treated almost continuously since that time with violet ray and "blood medicine." There was no history of the lesions being preceded by injury, but the patient said that the most distal lesion on the hand had become worse recently after a slight blow. The lesions were somewhat verrucous, rather superficial, and the exudate was a serosanguineous fluid, in which could be seen small pear-shaped spores, somewhat smaller than red blood cells. As the lesions suggested a possibility of eruption produced by bromides, the taking of bromide was completely excluded; the Belote-Wile test of the urine was negative. It was found that the "blood medicine" was elixir of iron, quinine and strichnine. Cultures were made of the pus, and at the end of six days a grayish culture with a minute central elevation had developed. The colony was distinctly radiating, and microscopically was found to consist of septate mycelial threads, with numerous pear-shaped spores attached by a pellicle to the mycelial threads. The culture gradually became dark brown, almost black. The great number of spores, together with the fact that the culture was whitish-gray at first, later becoming black, suggested the possibility of this being *Sporotrichum beurmanni*. Further study of the organism was necessary to determine this point.

DISCUSSION

DR. H. R. FOERSTER: I think a conclusive diagnosis could not have been made in this case without the culture of the organism.

DR. ZEISLER: I think Dr. Eisenstaedt reported a similar case of a tuberculoid type of sporotrichosis.

ULERYTHEMA FOLLICULITIS RETICULATA. Presented by DR. OLIVER.

A white man, aged 44, had a condition which was accidentally discovered in a barber shop four months before he was seen by me. The disorder consisted of ten or twelve small, round, white spots, which were slightly atrophic, partially devoid of hair and somewhat pruritic, discretely scattered over the sides of the face and chin.

DISCUSSION

DR. H. R. FOERSTER: I thought the condition was ulerythema sycosiforme.

DR. SENEAR: I saw this patient with Dr. Oliver and was of the same opinion as Dr. Foerster. I think the disease belongs in that group.

ARGYRIA. Presented by DR. STILLIANS.

This patient was first shown before the Chicago Dermatological Society on June 17, 1925, and the history was published in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY Stillians, A. W.: Argyria: abstr. (**13**:259 [Feb.] 1926). She was presented at this time to demonstrate the effect of the new treatment. The face was now brown instead of bluish-gray, the line of demarcation showing sharply in front of the ear. Still nearer the left ear were two small, café-au-lait spots which had received only one injection each; the center of the face was much lighter. The upper lip had received a few injections and was for the most part a bright red. The lower lip had not yet been treated in the vermilion portion, which still showed a distinctly bluish tint.

The treatment had consisted of intracutaneous injections of a photographic reducing fluid containing 1 per cent potassium ferricyanide and 6 per cent sodium thiosulphate.

DISCUSSION

DR. OLIVER: I think Dr. Stillians is to be congratulated on his results in this case.

DR. ZEISLER: I would like to know whether the intravenous administration of this preparation is feasible.

DR. STILLIANS: We are working on that now, but we do not think it is, for oxidation destroys it quickly. The silver apparently takes out the deep part of the stain at first, but it is difficult to have the preparation superficial enough to take out all the silver. In some places, only a few injections will remove the color, and in others several injections will not remove all of it.

A CASE FOR DIAGNOSIS. Presented by DR. EBERT and DR. MRASZEK.

A Polish woman, aged 42, one year before presentation developed yellowish-brown spots in the region of the right shoulder, following a fall which injured this region. New spots continued to appear while the original ones remained unchanged. There had not been any subjective sensations. Her husband was under treatment for syphilis of the central nervous system. She gave no history of any other skin trouble, but had had three laparotomies; the last was a complete hysterectomy performed two years before presentation. Two Wassermann tests of the blood serum had proved negative.

Brownish-red discrete and grouped macules, varying in size from that of a pea to that of a bean, were scattered over the right shoulder, the border of the trapezius muscle, and over the supraclavicular and infraclavicular spaces. Some of the lesions appeared to be slightly infiltrated. There was a fine wrinkling of the skin over some of the lesions.

Histologic examination showed that the epidermis was unaltered. There was no abnormal increase in melanin pigment. Turnbull's blue stain for hemosiderin was negative, showing that the color was not due to extravasated blood or to minute hemorrhages. In the upper reticular layer of the corium there was a round cell infiltrate about the vessels, composed principally of lymphocytes and a few plasma cells. This infiltrate extended to some of the larger vessels in the midcorium. The skin appendages were unchanged.

DISCUSSION

DR. H. R. FOERSTER: I considered the eruption to be pigmented syphilis, and believe the histologic examination bears out this diagnosis.

DR. PARKHURST: It occurred to me that the telangiectasia with the annular configuration of certain parts was suggestive of Majocchi's disease.

DR. FINNERUD: Grossly, the condition looked to me like a misplaced Schamberg's disease. There was a rather dense infiltrate, and it was fairly deep, running

down along the deep corium vessels. Although the cellular infiltration was composed chiefly of lymphocytes, there were a few plasma cells in it.

DR. EBERT: When I first saw the patient I was under the impression that the condition was a type of Schamberg's disease, but on studying the sections, I changed my mind. We made stains for hemosiderin, but there was no evidence of any blood pigment and no evidence of telangiectasia in the sections or of minute hemorrhages. The arrangement might be suggestive of a late syphilitic lesion. Some of the lesions are arranged in the segments of circles, and there are some atrophic lesions. The patient says that none of the lesions has disappeared, but it is possible that some did so without her knowledge. I think it is a late manifestation of syphilis.

PITYRIASIS RUBRA PILARIS. Presented by DR. FREDERICK SCHMIDT (by invitation).

A. S., aged 23, first complained of dry, cracked skin over the hands during pregnancy, two and one-half years before the present illness. The hands grew red, and at the same time a red, itching rash appeared on different parts of the body. The patient had lost 22 pounds (10 Kg.) since the condition started and felt "chilly" and nervous and did not have any appetite. She complained of burning and painful sensations in the hands and feet, always aggravated at each menstrual period. The palms and soles were red, dry and scaling, and on the soles were three sharply demarcated, elevated and hard callous-like, red nodes. Several Wassermann tests had been negative. The scalp was dry and the nails were without luster. Around the knees and on a few portions of the arms were groups of acuminate, rose papules, capped with a fine scale. There was a group of six or eight widened, slightly elevated pilosebaceous orifices on the dorsum of some of the first phalanges of the hands. Results of the blood count and urinalysis were negative. The blood pressure was 114 systolic and 64 diastolic.

DISCUSSION

DR. MITCHELL: I am inclined to agree with the diagnosis of pityriasis rubra pilaris.

DR. ZEISLER: I could not see enough to make a definite diagnosis of Devergie's disease. There were no typical black plugs on the dorsum of the phalanges.

DR. SENEAR: I was interested in this case because I showed one just about like it several years ago and Dr. Mitchell did not think it was Devergie's disease, and he proved to be right. After further observation the condition was found to be a case of acquired palmar and plantar keratoderma.

KERATOSIS PALMARIS ET PLANTARIS IN A DIABETIC. Presented by DR. ZEISLER.

A woman, aged 55, who had diabetes mellitus, presented hyperkeratosis of the palms and soles. The blood sugar, which had been 272 mg. per hundred cubic centimeters, had been reduced to 152 mg. The basal metabolism was plus 9.9. There were marked varicose veins of the legs, but the skin had remained normal until four months before examination. The eruption on the limbs was of the porokeratosis variegata type.

DISCUSSION

DR. PARKHURST: Between the third and fourth and the fourth and fifth toes there was scaling rather characteristic of dermatophytosis. It occurred to me that in a diabetic patient this condition might cause the lesions on the arms and legs, or this might be a type of epidermophytid.

DR. OLIVER: I have a patient in St. Luke's Hospital with hyperkeratosis of both feet, with similar lesions on the body. I have diagnosed it eczematoid ringworm of the feet with an epidermophytid of the body. She is doing well under treatment.

DR. ZEISLER: I have seen two or three similar cases that in which the condition cleared up under antidiabetic therapy. It was my impression that the hyperkeratosis of the palms and soles in this case was on a diabetic basis.

A CASE FOR DIAGNOSIS. Presented by DR. SCHMIDT for DR. STILLIANS.

F. W., a girl, aged 15, came to Northwestern University Dispensary in February, 1928, complaining of an pruritic rash on the body. The Wassermann reaction of the blood at that time was positive. She denied the ingestion of any drugs and also denied having received treatment of any type. Scattered symmetrically over the arms, legs, neck and portions of the chest were many discrete, exudative, rose-violet macules and papules the size of the finger-nail. In the center of some of these lesions there was a bright red point, and in some of the others there was a white, slightly elevated, hard papule the size of a pinhead. In addition, there were many smaller lesions, some of which were pale and almost the color of the normal skin; the others were brown. There were also a number of petechial macules from 0.1 to 0.2 cm. in diameter. The eruption was most marked on the back of the neck and extensor surfaces of the limbs. It had been present for three months.

DISCUSSION

DR. DOTY: We had a case similar to this and studied it for a long time. Roentgenologic study showed marked intestinal stasis and chronic appendicitis. After the appendix was removed, the condition cleared up.

DR. STILLIANS: We have not yet secured a biopsy, but the only diagnosis we could make was a toxic dermatitis similar to an urticaria of toxic origin. We thought that this theory would account for the petechiae.

A CASE FOR DIAGNOSIS. Presented by DR. WEBER.

Mrs. M., a housewife, aged 49, born in Austria, had a red patch on the forehead which had appeared during an attack of pleurisy in November, 1927, two years before presentation. The present disorder had begun three months ago on the sides of the neck, and during the next two weeks had spread to the chest, abdomen and the extremities. There had been some itching at the onset, but at present she was fairly comfortable except for a pain in her head. She had received some light therapy. Alopecia of the scalp, eyebrows and pubic region began three weeks after the onset of the skin disease. The patient was weak and unable to do her housework.

The eruption was symmetrical and involved the chest, abdomen and the extremities. The lesions were erythematous and papular. The papules were discrete in some areas, and in others ran together into patches. There were many follicular plugs over the arms and scapular region. A slight amount of fine scaling was noted. Suggestive areas of atrophy were seen on the arms and neck. The patient had a generalized adenopathy.

Examination of the blood revealed: hemoglobin, 70 per cent; white cells, 5,200. The differential count showed: polymorphonuclears, 44; large mononuclears, 2; lymphocytes, 49, and eosinophils, 5.

DISCUSSION

DR. ZEISLER: In the absence of a typical blood picture, I believe it is an aleukemic leukemia with skin changes.

DR. FINNERUD: I thought it was a "nonspecific" toxic eruption, the exact nature of which might not be determined until after months of observation. It might prove to be one of several things, such as may be seen in leukemia, pseudoleukemia and other disorders.

FOX-FORDYCE DISEASE. Presented by DR. SENEAR and DR. WIEN.

L. W., a housewife, colored, aged 26, had noted itching in the axillary regions for the past six to seven years, and in addition to this, an eruption in the axillae and the pubic regions for the past three to four years. The condition was more pruritic during the menstrual cycle. Her general health was good, and she was not constipated. In 1922, an ovary and her tubes were removed, and she thought the condition had been worse since the operation.

Both axillae were the site of small, firm, rounded papules that had a tendency to remain discrete. They were slightly darker than the surrounding skin and varied in size from that of a millet seed to that of a split pea. Similar lesions were present in the pubic region.

DISCUSSION

DR. WIEN: This patient claims that the itching has been more intense during the menstrual cycle. In a report by Jung (*Dermat. Wchnschr.*, July, 1927, p. 1002), it was stated that the itching in this disorder is not as severe during the menstrual cycle, but this woman said that it is more pronounced. Jung's impression is that the irritating substance that is excreted by the apocrine glands is excreted in another way by the body during this time.

EPITHELIOMA (MULTIPLE, BENIGN, CYSTIC). Presented by DR. FINK (by invitation).

A woman, aged 55, showed symmetrically distributed lesions over the eyelids, forehead, nose, cheeks and chin, which had been present for thirty-five years. The patient thought the lesions were more pronounced at the onset during the menstrual periods. These were firm, round and irregular shaped shiny papules varying in size from that of a pinpoint to a pea. They varied from a white to a light yellow and appeared translucent or pearly. One lesion on the lip appeared verrucous and papillated. The patient had sought relief for a lesion on the forehead, which was the size of a dime, with firm, rounded borders of pearly appearance and with a stellate central ulceration which had been treated with the roentgen ray. One sister and her mother were reported to have the same condition.

Biopsies from an active lesion on the forehead and one from the right chin were presented.

DISCUSSION

DR. FOERSTER: In connection with the history of this disorder occurring in other members of the family, I think the question of adenoma sebaceum should be considered.

BLASTOMYCOSIS. Presented by DR. MITCHELL.

A man, aged 27, was first seen on March 9, 1928, with a condition consisting of lesions which had been present on the hands, face and neck for two months. He was a truck driver, and did not come in contact with animals, nor had he been about a barnyard at any time. The lesions were verrucous, discrete, soft and had a bright red base. The largest lesion, which was at the base of the neck on the left, contained a quantity of pus in a multilocular cavity, which had crusted over. There was no history of the ingestion of drugs other than an occasional dose of bromo-seltzer. Results of the Belote-Wile test on the urine were negative. In the pus could be found numerous double-contoured budding organisms. The cultures grew slowly at room temperature, and somewhat more rapidly at body temperature. The administration of potassium iodide by mouth resulted in a rapid improvement in the appearance of the lesions.

DISCUSSION

DR. H. R. FOERSTER: This case shows the importance of employing the laboratory in establishing the diagnosis of atypical lesions. Dr. Mitchell is to be congratulated on the excellence of his photomicrographs.

DR. MITCHELL: I thought this case was interesting because of the unusual number of lesions and the rapid onset. The only possible source of infection I could find in the history was an infection from a barber shop.

BLASTOMYCOSIS. Presented by DR. HEDGE.

S. B., a colored man, aged 60, a pullman porter, was presented before this Society at the March meeting in 1926 (Stillians, A. W.: Blastomycosis, ARCH. DERMAT. & SYPH. **14**:470 [Oct.] 1926). At that meeting, Dr. Stillians, who presented this patient, suggested the possibility of a generalized infection, because of the history of chills and fever experienced by the patient just prior to the onset of the disease. At the time of the former presentation the lesions were small and confined to the nose and the lower right eyelid; there were two small lesions on the hands and three on the buttocks. The lesion on the nose was curretted and local applications of iodine were given. The patient was lost to sight for two years and reappeared in March, 1928, at the Dispensary of the Northwestern University Medical School, and the present growth of the lesions was noted. The condition of the nose had improved considerably, but the area now extended over the right eye and onto both upper and lower lids. The lesions on the buttocks, left ankle and both hands had grown larger and showed unmistakable signs of present activity. New cultures had been made which were growing well on Sabauraud's mediums. The old killed cultures were presented for observation and a section of the tissue made by Dr. Lawless at the time of the former presentation showed the blastomycetes. Pictures of the condition as it formerly was and as it was now were also exhibited. The principal interest centered about the fact that two years ago the question arose as to the possibility of a generalized infection, that there was evidence of more generalized distribution of lesions now than then, and that the general health of the patient was still favorable.

EPITHELIOMA. Presented by DR. STILLIANS.

A woman, aged 22, a waitress, said that she had first noticed a pimple on the upper lip two years before presentation. After she had opened the lesion, it had become infected, discharged pus and crusted over. Since that time it had gradually increased in size. She had used various salves but had never taken any irritating medicine, such as iodine.

On the right side of the upper lip was a hard, elevated, round lesion about 1.3 cm. in diameter, paler than the normal skin, scarred at the center and unevenly depressed. On palpation, a distinct underlying induration was felt about 4 cm. in diameter and nearly the entire thickness of the lip. The Wassermann reaction was strongly positive. Under the oral administration of sodium iodide the underlying induration seemed to have lessened. When first seen, on Feb. 29, 1928, the patient also had a mild pityriasis rosea of the face and neck.

DISCUSSION

DR. STILLIANS: We presented this patient because of her age, the deep infiltrate and the fact that she had shown a positive Wassermann reaction. I was particularly interested in talking the matter over with Dr. Larkin. He is afraid to use radium on syphilitic patients until they have had some treatment, because they are more apt to develop a chronic radium ulcer than patients without syphilis.

LEUKOPLAKIA. Presented by DR. SCHMIDT for DR. STILLIANS.

E. La V., aged 44, came to the Northwestern University Dispensary in February, 1928, complaining of soreness of the tongue of three months' duration and a skin rash which she said had been present for one year. There was an oval, white, sharply demarcated, raised area on the lateral edge of the tongue and on the left buccal mucous membrane there were several interlocking, gray,

slightly elevated rings, each 3 or 4 mm. in diameter, with a fairly normal mucous membrane in the centers. There were a few, short, radial, grayish striations leading outward from these circles. Along the course of the seventh and eighth ribs on each side, in the midaxillary line, were groups of brown pigmentations the size of a pea and oval brown-red papules the size of a lentil, which were covered with adherent scales. Results of several Wassermann, Kahn and organ luetin tests had been negative. Fusiform bacilli and spirilla were not found in smears made from the mouth. A papule was removed for microscopic examination.

DISCUSSION

DR. ZEISLER: There were a number of remarks about this case being lichen planus, but I could not see lichen planus either in the lesions on the skin or in the mouth. I thought of tertiary syphilis or tuberculosis of the lichenoid exanthematic type with miliary tuberculosis of the mouth. I would like to see a biopsy taken from the lesions in the mouth.

DR. FINNERUD: Dr. Otto Foerster pointed out the lesions of the right buccal mucous membrane to me, and they were typical of lichen planus. I thought some of the lesions on the trunk were those of annular lichen planus.

DR. MITCHELL: I felt that it was lichen planus plus something else, possibly a tuberculous glossitis.

DR. PARKHURST: I agree with the diagnosis of lichen planus. In addition to the other observations, there were two or three faint polygonal papules on the flexor surface of the wrist.

DR. STILLIANS: We have discussed the matter considerably and I have held out against the diagnosis of lichen planus, in spite of the section. I could not diagnose lichen planus in the lesions on the trunk, and in spite of the fact that the Wassermann reaction of the blood has been repeatedly negative, I have held out for the diagnosis of tertiary syphilis. The lesions in the mouth, I think, are those of ulcerated leukoplakia, but I do not know why they ulcerated. Dr. Ormsby said he had seen two cases of ulcerating lichen planus of the mouth.

SYPHILIS (CORNÉE). Presented by DR. ZEISLER.

A negro, aged 45, had a cornified annular lesion of the toe that had been present for six months, and had been painful for the past six weeks. He gave a history of syphilis fifteen years before the present illness. The Wassermann reaction was positive.

DISCUSSION

DR. OLIVER: I thought the man had a large hypertrophic plantar wart, although I believe one ought to rule out a trophic ulcer.

DR. FOERSTER: I would not venture a diagnosis without having removed the crust.

DR. ZEISLER: I do not know, for I have seen the man only once. He does not have tabes. I hesitated between the diagnosis of an unusual type of plantar wart and of syphilis cornée.

SYPHILIS (LICHENOID SECONDARY ERUPTION WITH NAIL CHANGES). Presented by DR. OLIVER and DR. FINNERUD.

A Slovanian man, aged 48, had an eruption on the body of two months' duration and changes in the nails which he said had first been noticed at exactly the same time as the eruption on the body. He said that he had not had any skin or venereal disease before. According to the history, which was difficult to obtain, he had a genital ulcer which had appeared about five months before presentation and which had lasted a little more than a month. About two months

after the time of the appearance of the genital lesion, the eruption on the body had appeared, and at that time he had also noticed pain and weakness in the extremities and trouble in the eyes.

Examination revealed a poorly nourished person with a recently healed genital lesion, iritis, which was most marked in the right eye, and which the oculist said was apparently syphilitic, and a generalized small acuminate papular eruption which was most marked on the trunk and particularly on the back. These papules were arranged in coin-sized groups and were a light reddish brown. The finger-nails were of a clouded-amber appearance throughout (the patient said that this change began at the proximal end of the nails and progressed distally). The toe-nails had not been affected. There was general adenopathy and the Wassermann reaction of the blood was strongly positive. The spinal fluid was normal.

Since admittance to the Cook County Hospital, the patient had received five injections of neoarsphenamine and at the time of presentation the eruption on the body was about three-quarters cleared, but the finger-nails were unchanged in appearance.

SCLERODERMA. Presented by DR. HEDGE.

H. B., a woman, aged 33, Danish, one year before presentation had noticed that the right forearm showed some hardening and thickening in a linear area extending from the elbow to the wrist. There was a band of similar nature on the right leg from the knee to the ankle, extending onto the dorsum of the foot. Tenderness or inflammation had not been noted. There had been a slight hypersensitiveness over the areas during the duration of the visible disturbance. The neurologic and medical history were negative. The Wassermann reaction of the blood was negative. The biopsy specimen showed thickening of the blood vessel walls and cellular infiltration in the corium and subcutaneous layers. The blood count showed: red blood cells, 4,280,000; white blood cells, 8,200; hemoglobin, 80 per cent. The differential count revealed: lymphocytes, 30; large mononuclears, 3; neutrophils, 65; basophils, 1, and eosinophils, 1. Roentgenograms of the underlying bones revealed some thickening, but otherwise they were of normal contour. The urine was normal. The basal metabolic rate, measured by the Benedict-Roth machine, was a minus 9¾.

A CASE FOR DIAGNOSIS. TUBERCULID (?). Presented by DR. FINK (by invitation).

A woman, aged 20, presented lesions on the legs which had been present for five months, and lesions on the hands of two weeks' duration. There was also enlargement of the cervical glands; this condition had been present for six months. The lesions were bilateral and limited to the lower legs posteriorly and to the fingers. At the onset of the eruption the patient had experienced slight pain. The legs showed discrete lesions varying in color from a bluish tint to brown and in size from that of a pinhead to that of a cherry; some of the smaller ones were follicular and capped with cornified adherent crusts. The larger lesions were rather ill defined, roundish, deep-seated, soft and easily compressible, cyanotic looking nodules. Lesions on the fingers were soft and of the same character as those on the legs. Lesions had not appeared in the mouth.

A complete examination of the blood, including the Wassermann reaction, was negative.

DISCUSSION

DR. FOERSTER: I think that the lesion is a tuberculid.

DR. MITCHELL: I saw this patient ten days ago in the clinic. At that time she had some lesions about the dorsum of the fingers that were fairly characteristic of erythema multiforme. About a week later, without any treatment whatever, these had entirely involuted and the lesions on the legs had improved. She has been all through the medical department of the dispensary and nothing has been found to suggest tuberculosis in the patient or in any members of her family. The examination of the gland, according to her chart, showed it to be a sclerotic

gland of the Hodgkin's type. Whether it is Hodgkin's or tuberculosis of the glands, or both, remains to be determined. We have a biopsy from the leg, but the examination was not completed for this meeting.

MACULAR ATROPHY. Presented by DR. EBERT.

A man, aged 31, of mixed negro and Mexican blood, presented an eruption on the trunk of five years' duration. He thought the lesions appeared in a few months and were formerly more raised than at present but of the same color. They did not cause him any discomfort. He gave a history of having had a penile ulcer with inguinal adenopathy about a year before the present lesions had appeared. This ulcer had persisted for some time and had been treated locally. A few years before the present illness he had had three intravenous injections, probably of some arsenical preparation. Since he had been under observation, his Wassermann reaction had been repeatedly negative, both before and after treatment with neoarsphenamine. His wife had had one miscarriage and was now under antisyphilitic treatment at the Cook County Hospital.

Numerous macules varying in size from that of a matchhead to that of a pea were scattered over the trunk, especially over the flanks and back. They varied in shape from round to oval and were much less pigmented than the surrounding skin, being barely visible when the skin was tense, and most noticeable when the skin was lax. Some of the macules were definitely raised above the level of the surrounding skin and slightly thickened. The skin over all the lesions appeared atrophic and finely wrinkled. The long axis of the oval lesions followed the lines of cleavage of the skin. In addition, over the sacrum, the trochanters and the anterior axillary folds there were irrigular, whitish striations, some of which were raised. The skin overlying these striae was also atrophic.

The histologic examination showed that the epidermis was somewhat thinned and the papillae flattened. There was little melanin in the basal layer, considering the nationality of the patient. The appendages of the skin were reduced in the sections studied. Weigert's elastic tissue stain demonstrated some rarefaction of the elastin.

DISCUSSION

DR. EBERT: I thought the case was interesting because the disorder appeared within a few months after an ulcer which was probably syphilitic. The Wassermann reaction of the blood is negative at present. The case belongs in the group of macular atrophies associated with syphilis.

NEW YORK DERMATOLOGICAL SOCIETY

PAUL E. BECHET, M.D., *Secretary*

Regular Meeting, March 27, 1928

JOHN E. LANE, M.D., *President*

LEUKOPLAKIA. Presented by DR. FOX.

W. S., a full blooded negro, aged 45, born in the United States, presented an eruption of the mouth, first noticed two years before presentation. The eruption consisted of grayish white patches of limited extent and moderate infiltration on the central part of the anterior half of the dorsum of the tongue and both commissures. He complained of soreness after eating, drinking and smoking. There was a history of a genital sore twenty-five years before presentation; the Wassermann reaction was strongly positive. The patient had been an inveterate smoker of cigars, cigarets and pipes during his adult life. The teeth were in good condition and he had suffered from indigestion for years.

PAGET'S DISEASE OF THE NIPPLE. Presented by DR. FOX.

F. M. W., a woman, aged 68, had suffered from an eruption of the left nipple for the past six years. The lesion of the nipple was smaller than the size of a dime until last summer, when it spread peripherally to form a round area about 2½ inches (6.27 cm.) in diameter. The surface was partly red and raw and partly crusted. There was moderate infiltration. The nipple was retracted and on a level with the surrounding area. The nipple of the opposite side was small but not retracted. The lesion caused a feeling of soreness. There were neither lumps in the breast nor an enlargement of the axillary glands. The patient was a vigorous woman in excellent general health. The lesion had been lately treated with roentgen ray. The histologic examination confirmed the clinical diagnosis of Paget's disease.

LICHEN PLANUS CONFINED TO THE MOUTH. Presented by DR. FOX.

H. M., a woman, aged 55, married, born in Hungary, had suffered from an eruption confined to the mouth for the past three years. The lesions were situated on the mucosa of the cheeks and dorsum of the tongue. The eruption, though characteristic, was not profuse. It consisted of grayish, superficial dots the size of a pinpoint and reticulated areas, and a suggestion of annular configuration. There was not any appreciable infiltration, and she did not complain of any subjective symptoms. The condition had been first noticed by a dentist who referred her to the clinic. An examination of the entire body, including the genitalia, did not show any evidence of lichen planus or any other abnormality. She had never used tobacco. The histologic examination showed chronic inflammation, probably lichen planus.

BROMODERMA FOLLOWING INGESTION OF "BROMO-SELTZER." Presented by DR. FOX.

J. H., a woman, a middle aged school teacher, had suffered from an eruption of the legs for four years. It consisted of crops of somewhat painful and tender lesions of various size, situated on the sides and backs of both legs. When seen for the first time about three weeks before presentation, a diagnosis of Bazin's disease was made from the history of nodular lesions which broke down and were followed by scarring. Two weeks later, new lesions appeared which had the typical appearance of a bromoderma. Some were of the bromide "acne" type; one was a large granulomatous lesion 1¼ inch (3.1 cm.) in diameter, suggesting the appearance of blastomycosis. On account of the extensive scarring, the diagnosis of bromoderma had not been previously considered. The patient said that she was not in the habit of taking medicine, but freely admitted, on questioning, that she had taken "bromo-seltzer" steadily for the past ten years for headaches. She had taken at least 1 heaping teaspoonful every day during this period, and at times as much as 5 teaspoonfuls. Further questioning disclosed the fact that the scarring was due to treatment, chiefly by curetting. The largest scar, about 1½ inches (3.7 cm.) in diameter, followed an ulceration which had taken nine months to heal. The test for bromine, devised by Dr. Belote, failed to show the presence of bromine in the urine both before and after the intravenous administration of physiologic solution of sodium chloride, in doses of 200 cc. The patient's general condition was good, though walking was difficult on account of pain and soreness of the eruption.

DISCUSSION

DR. MACKEE: I had a patient similar to the one presented by Dr. Fox. The eruption had been recurrent over a period of many years and had perplexed a number of excellent dermatologists. "Bromo-seltzer" had been taken almost daily for years. An investigation disclosed the fact that some preparations contain bromine and some do not, which was the reason for the remissions and exacerbations.

PACHYONYCHIA CONGENITA (JADASSOHN AND LEWANDOWSKY). Presented by DR. FOX.

S. W., a boy, aged 3 years, 9 months, born in the United States, of American parents, presented peculiar anomalies of cornification affecting the nails and cutaneous surface. The lesions of the nails had been noticed two weeks after birth, those on the skin when the patient was almost 2 years of age. At the age of 1 year, the child was said to have suffered from an enlarged thymus gland which had interfered with breathing and which had been treated by the roentgen ray. He had suffered from diphtheria shortly before the appearance of the cutaneous lesions. The patient was an only child of young, healthy parents. A similar disease was not present in any of his relatives, including twelve first cousins on the maternal side, and four on the paternal side. Examination showed the patient to be a well developed, mentally active, fine looking child, weighing 42 pounds (19 Kg.). The eyes were blue and the hair was blonde. All the finger-nails and toe-nails were abnormal. The finger-nails were of normal width but were greatly thickened, the thickness increasing toward the free borders. The surface was smooth, and did not present pits, ridges or furrows. There was some diminution of luster. The nails were grayish brown, being increasingly discolored toward the distal ends where there were some whitish streaks on the nails of the left hand. The plates of the nails were extremely hard and firmly attached to the bed of the nails. There was neither paronychia nor abnormality of the skin of the fingers. There was not any hindrance to the performance of fine movements. The rate of growth of the nails was normal and the direction straight. The toe-nails showed changes similar to those of the finger-nails with the exception that the growth, if uncut, was in a curved direction (onychogryphosis). Subjective symptoms were not caused by the changes in either finger-nails or toe-nails. The scalp was normal. There was not any hyperhidrosis of the face, and nothing to suggest granulosis rubra nasi. At the right angle of the mouth there was a crusted area, apparently a simple herpes; the mother said that the patient often had "cold sores" in this location which lasted several weeks. The tongue was coated habitually, but there was nothing to suggest leukokeratosis. The teeth were in good condition and did not show abnormalities. On the extensors of the forearms, there were keratoses from the size of a pinpoint to the size of a pinhead. Over each olecranon there was an irregularly shaped warty mass the size of a bean surrounded by small, warty spinous lesions the size of a pinhead. On the lumbar and sacral regions, there were fairly numerous, grouped, small lesions the size of a pinhead which were rough to the touch, and the largest had red bases and filiform projections. The genitalia were apparently normal. The lower extremities were affected chiefly above the knees and to a less extent on the anterior aspects of the legs. The buttocks showed a similar condition to that of the lumbar region, but with more marked filiform spines. The thighs showed a fairly profuse eruption of follicular keratoses from the size of a pinpoint to the size of a pinhead, the largest having filiform spines. The skin between all of the described, warty lesions was smooth and normal in appearance. On the internal aspect of the great toes, metatarsal regions and heel of the right foot, there were yellowish callosities from the size of a pea to the size of a bean, under which were painful bullae. On puncture of a bulla, clear fluid of alkaline reaction was obtained, and was found to be sterile on culture.

PORT WINE NEVUS TREATED WITH GRENZ RAYS. Presented by DR. MALONEY.

H. P., a girl, aged 3 years, born in the United States, presented a port wine nevus on the left side of the face, extending from the chin to the ear over the inferior maxillary bone. She had had one treatment with grenz rays over the middle third of the nevus four months before presentation, and two treatments over the upper third of the nevus — one four months and the last one five weeks prior to presentation. The first area showed a decided loss of color, and the second area still showed the usual erythematous reaction following the application of grenz rays.

PORT WINE NEVUS TREATED WITH GRENZ RAYS. Presented by DR. MALONEY.

I. G., a man, aged 43, born in Austria, manager of a restaurant, presented a port wine nevus on the left side of the face, covering most of the left side of the nose and cheek. This nevus had been treated over four separate 1 inch square areas by the grenz rays. One area, on the left temple, had been treated four times; one on the nose three times; one on the cheek under the left eye three times, and one lower down on the cheek twice. All of the treated areas showed a decided lessening in color as compared with untreated areas.

DISCUSSION

DR. MACKEE: I am impressed with these results. There is a definite improvement in each patient. The improvement in the man is remarkable because adult cases are even more stubborn than when occurring in children. This may prove to be the therapeutic method of election, especially if time demonstrates that sequelae never develop subsequent to these repeated strong erythema doses. I hope that Dr. Maloney will demonstrate these patients once or twice a year for the next few years.

DR. ELLER: There has certainly been great improvement and I too would like to see these cases again.

A CASE FOR DIAGNOSIS. CAPILLARY DILATATION. Presented by DR. BECHET.

H. G., a woman, aged 37, had had a dermatosis limited to the face for seven years. It consisted of a peculiar "blush-like," pinkish red, symmetrical patch on either side of the nose and extending to the chin. On close inspection in good daylight, the patches seemed made up of a capillary network. The color was permanent, and there had never been any remission, but it was greatly heightened by alcoholic or dietetic over indulgence. The patient had not suffered from the prevailing cosmetic habit. She had been under observation off and on for three years, and during that time there had never been any change in the appearance of the lesion. There had not been the slightest scaling, or any papule, erythema, or rosaceous outbreak at any time, either in the affected region or elsewhere on the face. Definite telangiectasia was not discernible, except on the cheeks, where there were a few telangiectatic vessels. There was a faint pinkish nevus, about 1 inch (2.5 cm.) in diameter, on the back of the neck, which had been present since birth.

DISCUSSION

DR. WISE: I could not make any diagnosis other than rosacea.

DR. WILLIAMS: I would like to know if there is any history of nose bleeding in the patient or in any of the family. Many of these curious dilatations of blood vessels which develop after infancy are in reality instances of an extremely mild type of hereditary hemorrhagic telangiectasia.

DR. HIGHMAN: I do not agree with Dr. Wise. It is not rosacea. It is a congenital anomaly of the capillaries.

DR. ELLER: I think that one might consider the diagnosis of rosacea, with a mild seborrheic eczema in this case.

DR. WHITEHOUSE: I agree with Dr. Wise.

DR. HIGHMAN: I do not see that the condition can be anything else but a disease of the capillaries of the skin that has not been identified. The striking part of the distribution of the lesions on the face is the curious linear marking, beginning near the nose and running down the cheek in a distinct band; as distinct as one sees, for example, in acrodermatitis on the forearm. I think that the girl has telangiectasia all over the face — though, of course, this might also be true in rosacea. She has a curious distribution of birth-marks at the nape of the neck and another at the root of the nose. In other words, she was evidently born with a tendency to enlargement of the capillaries; and whereas I

have not any distinct category to suggest what this condition belongs to, I do not see why there cannot be congenital anomalies of the capillaries diffusely spread. The condition is essentially that of a vascular nevus. It is futile to call this rosacea, for it is not; she has none of the elements of rosacea — not the enlarged sebaceous follicles, no more seborrhea than many persons. She has not eczema or seborrheal dermatitis, for she has neither scaling nor vesiculation and signs of irritation of the skin are not present. If the face flushes after taking a cocktail or something similar, why should it not with enlarged capillaries, for the reason that the vasodilators are all affected. We have to interpret a case of this kind as something by itself.

In vascular nevi of this sort, whenever the baby cries the spots get redder.

DR. TRAUB: I agree with Dr. Highman on most points, but I thought there was some atrophy, and was wondering whether the patient had had any roentgen-ray examination for the teeth or sinuses. This might have had some part in the production of the lesions.

DR. WILLIAMS: I have seen the same thing — a patient with a birth-mark over the glabella which was ordinarily so pale as hardly to be visible, but which became bright pink under emotional excitement.

DR. BECHET: I agree with Dr. Highman's remarks; he has expressed my idea of the case fully, and I therefore can add nothing other than to disagree with the diagnosis of either rosacea or seborrhea. I have observed the case for three years, and have never at any time seen a papule, or the flamboyant red of rosacea. There has never been the slightest scaling, either greasy or dry. In good daylight, the only definite objective symptoms are two symmetrical patches on either side of the angles of the mouth, extending from the nose to the chin. These patches are pale, pinkish-red, and are apparently made up of an intricate, extensive capillary network. Actinotherapy, roentgen-ray treatment and exfoliative treatment had been absolutely devoid of results; equally negative was the use of bland local measures.

LICHEN NITIDUS (BARBER'S TYPE). Presented by DR. CLARK.

F. S., a school girl, aged 14, was demonstrated before the Brooklyn Dermatological Society at the January, 1928 meeting and the report was published in the Transactions of that Society.

DISCUSSION

DR. FOX: Clinically, the condition does not resemble in the slightest the few cases of this rare disease which I have seen. These have consisted of tiny, discrete papules suggesting a miniature lichen planus. While this might be similar to the cases described by Barber resembling pityriasis rosea, it is far from the ordinary picture of this disease.

DR. MALONEY: I do not agree with the diagnosis of lichen nitidus. The papules are too inflammatory; there is too much color in them. The papules of lichen nitidus are the color of the skin or considerably paler. They are always discrete and there is usually not any itching. That there is itching in this case is shown by the presence of linear scratch marks with small papules along the scratched surface. The histologic report does not correspond with what one expects to find in lichen nitidus. This case resembles a condition described by Pels of Baltimore, to which he applied the name miliary lichen planus.

DR. FRASER: Dr. Fox and Dr. Maloney have both said what I had in mind to say about the clinical aspects of the case. There were not any features mentioned in the histologic report which are characteristic of lichen nitidus. I cannot understand how the histologic diagnosis of lichen nitidus could be made from this report. I therefore disagree from both the clinical and the histologic point of view with the diagnosis of lichen nitidus. I do not have a diagnosis to offer, but Dr. Maloney's suggestion should be considered.

DR. SCHWARTZ: I agree that on neither clinical nor histologic grounds could I make the diagnosis of lichen nitidus in this case.

DR. WHITEHOUSE: I think that Dr. Maloney has covered the ground thoroughly. The condition does not resemble lichen nitidus clinically; on the other hand, it clinically resembles lichen planus, which is rather confirmed by the presence of tiny papules that resemble lichen planus that are shown along a scratch on the patient's neck. I certainly would not call it lichen nitidus.

DR. MACKEE: Neither the clinical picture nor the histologic picture suggests lichen nitidus. The histology of lichen nitidus is characterized by an infiltration that is limited to one or two enlarged papillae, which is not the picture in this case. Lichen planus is the probable diagnosis.

DR. RULISON: I saw the case at another meeting and at that time I was impressed with the fact that the other two cases of lichen nitidus I had seen did not show changes in the color of the lesion from that of the normal surrounding skin.

DR. HIGHMAN: The ground has been well covered by the various speakers, but one or two points might be emphasized. In the pathologic description that Dr. Throne read, it was emphasized that the rete pegs did not seem to be enlarged, whereas it is characteristic of lichen nitidus that they project down about the infiltration. I have never known this to fail in lichen nitidus. In the description Dr. Throne read, there was mention of neither giant cells nor epitheloid cells, found in lichen nitidus. Dr. Throne's description is characteristic of lichen planus. Furthermore, I glanced through Barber's reprint on lichen nitidus, and his description does not conform to what we recognize as lichen nitidus in this country. The clinical features have been well described this evening; lichen nitidus is never a scaling disease. In fact, there is a tendency to grouping in lichen nitidus. I fancy that whatever this may be — and I think it is lichen planus — it certainly is not lichen nitidus either clinically or histologically.

DR. BECHET: It seems to me that there was some definite superficial atrophy in the lesions, besides the pigmentation. I would therefore be inclined to the diagnosis of an aberrant type of lichen planus atrophicus.

DR. LANE: My impression is that it is lichen planus, not particularly different from any other cases except that it is limited to a small area.

DR. THRONE: The chief point in the report was overlooked by practically every one who discussed the case. That is, the patient is presented as a case of lichen nitidus of the type described by Barber. Barber in his report of this condition said that the eruption was composed of papules which were not necessarily colorless, but that they might show pigmentation and a reddish color. As far as their histology is concerned, he quotes Arndt as stating that in early papules epitheloid and giant cells may be absent and that the infiltration could be composed of round cells only. Barber described one type of this condition in which the lesions were grouped together in a manner suggesting pityriasis rosea, with the lesions most marked around the base of the neck and on the upper part of the trunk. When this patient was first seen about two months before presentation this resemblance to pityriasis rosea was marked. At that time the condition had been present only a short time. At the Strassburg reunion last June, Civatte, in discussing Barber's paper, stated that in one of his own cases he found in one lesion the histologic conditions of lichen nitidus and in others in the same patient the histologic conditions of lichen planus. Barber was unable to find any relationship in his cases to tuberculosis. From Civatte's and Barber's statements it may be that the condition described by Barber as lichen nitidus was an aberrant type of lichen planus. In my opinion, this case belongs to the group described by Barber, and is presented as such; and that the clinical and histologic condition justify that diagnosis.

DR. HIGHMAN: I am much interested in what Dr. Throne has said, but as a matter of record and for the sake of our reputation we ought to protest against

a man's assuming a term already associated with something else. If it was more like lichen planus, why did he not call it by that name?

MACULAR LEPROSY. TO SHOW RESULT OF TREATMENT. Presented by DR. THRONE.

C. S., a boy, aged 12, born in Dutch Guiana, was first seen in September, 1926. The duration of the disease at that time was four years. There was present a large semilunar lesion on the right thigh which showed an elevated, brownish red, granulomatous border. Irregular, depigmented patches were present on the face and trunk. The interossei muscles of the right hand were atrophied; the hand showed a typical condition called "main en griffe." The ulnar nerves were markedly enlarged. Areas of anesthesia were present. The patient had received weekly intravenous injections of antimony arsphenamine, during a period of approximately fifteen months. At the time of presentation, the clinical symptoms had practically entirely disappeared.

MACULO-ANESTHETIC LEPROSY. Presented by DR. THRONE.

R. S., a man, aged 22, born in Venezuela, claimed that the rash had been present for three months. On the face, neck, trunk and limbs, there were oval, rounded and annular lesions. The lesions were brownish red. They were granulomatous, and showed moderate infiltration. The hands showed beginning atrophy of the interossei muscles, and a beginning appearance of "main en griffe." The ulnar nerves were enlarged and areas of anesthesia and parathesia were present. The patient had been given injections of antimony arsphenamine, and would be presented again to show the effect of this line of treatment.

LEPROSY (EARLY). Presented by DR. THRONE for DR. CLARK.

U. G., an orphan, aged 6, born in Porto Rico, had lived in this country for one year. Two months before presentation, red spots began to appear on the left cheek, which did not seem to increase in size and never itched or became irritated. When first seen, the patient presented four bluish, brownish or reddish nodules, arranged around the circumference of a circle, the size of a pea and perceptibly infiltrated. On the right cheek, there were three macular lesions the size of a three-cent piece. Two were dull red and one was bluish red. Scattered over the back, buttocks and arms, there were several larger and smaller depigmented areas that showed distinct anesthesia. The ulnar nerves seemed slightly enlarged. Cultures were made from nasal smears and were negative. Biopsy had not been made, as the patient was seen for the first time only two days before presentation. The mother had died of tuberculosis and the father of apoplexy.

XERODERMA PIGMENTOSUM. Presented by DR. FOX.

J. D., a salesman, aged 19, born in the United States, had suffered from the eruption since the age of 1. A younger brother was said to have had the same disease and had died at the age of 7. There were two other brothers who were healthy. Other relatives had not been similarly affected. His parents were first cousins. The eruption was extensive, and involved the face, neck, arms, forearms and greater part of the trunk both anteriorly and posteriorly. The greatest intensity was seen on the face. The eruption consisted of a profuse amount of freckles interspersed with telangiectases, whitish scars and keratoses. A number of epitheliomatous lesions had been successfully treated by roentgen ray and radium. The eruption always became aggravated by exposure to the sun. Roentgenograms of the hands and skull were made by Dr. L. T. Le Wald, who reported as follows: "The hands are normal. The pituitary fossa appears to be smaller than the average, and the clinoid processes are very prominent and tend to enclose it. As a result of these appearances the patient might suffer from dyspituitarism or other pituitary lesions."

DISCUSSION

DR. BUCKY: Dr. Fox showed the patient to me because this disease shows similar changes as observed after extensive roentgen-ray treatment. I asked for roentgenographic examination, for certain reasons. It is not yet generally known that endocrine disturbances sometime produce distinct symptoms in the bones. We notice these changes especially on the hands and skull. The roentgenograms of the case in question are extremely interesting. The skull shows that the anterior and posterior groove form one straight line, whereas in the normal skull they are deeper, well curved, and are differentiated from each other by an angle of about 45 degrees. In this patient, this angle could not be noticed; the grooves were markedly flattened. The sella turcica had an oval shape. These formations are also seen in the so-called Froehlich's syndrome; this disease is called degeneratio adiposo genitale. The hands were normal, in Dr. Fox' patient, but sometimes, persistent epiphyseal lines over the bases of the metacarpal bones are found in endocrine disturbances. It is interesting that these epiphyses are normal in swimming animals and mammals, as well as fishes. The observations on this patient give the impression that the disturbance of the skin may be based on an endocrine disorder.

PURPURA ANNULARIS TELANGIECTODES (?). Presented by DR. WISE for DR. HARRIS.

J. L., a man, a club manager, aged 44, said that he had had an eruption on both lower extremities for the past two years, which did not itch. About two years before presentation, the eruption had begun on the dorsum of the right ankle as a reddish discoloration which gradually faded into a rusty brown. Other areas on both legs became involved. Six months before presentation he had noticed a nodule the size of a pea in the center of one area that had persisted. A similar nodule in another area, he thought, had been present for many years.

DISCUSSION

DR. WHITEHOUSE: If it were not for the duration of the condition, I should think it was Majocchi's disease.

DR. HIGHMAN: There is certainly an arteritis in the capillaries of the skin and some degeneration, and, in addition, a distinct inflammatory deposit around the vessels of small round cells. It is an arteritis, with an almost granulomatous disturbance of the skin. I should not know what to call it.

DR. MACKEE: I do not think that it is a case of purpura annularis telangiectodes.

MYELOGENOUS LEUKEMIA. Presented by DR. WHITEHOUSE.

J. H., a man, aged 68, born in Germany, entered the Skin and Cancer Hospital March 15, 1928, with five lesions situated on the eyebrows, forehead and nose. They were raised ¼ inch (0.63 cm.) above the skin, and were oval, soft and painless, with dilated capillaries over them, and around the borders. The nipples were both elongated with the skin reddened and folded. The hands were swollen and bluish. The eruption was of one and one-half year's duration, and had begun with the condition on the hands. The examination of the blood showed: white blood cells, 44,000; myeloblasts, 64 per cent; polymorphonuclears, 23 per cent; lymphocytes, 9 per cent; mononuclears, 1 per cent, and red blood cells, 3,500,000. The specimen obtained at biopsy was not yet fully examined. The results of the examination of the urine were negative.

Physical examination showed the blood pressure to be 220 systolic and 120 diastolic; the heart showed fibrillation and myocarditis. The spleen and nodes were not palpable, except the glands in the inguinal region.

DISCUSSION

DR. BUCKY: A year or two ago an article was published in Germany about the roentgen-ray treatment in such cases. I am sorry that I forgot the name of the author. In this article it was stated that it is much better to treat the entire body instead of applying the rays locally over a limited area. The results mentioned are much better. I have tried this method in two cases and was much pleased with the results. The treatment is given from a distance of about 1 meter from the focus, and only from 5 to 8 per cent of the skin unit is given. One of my patients showed 200,000 white blood cells and came down to 14,000 in the course of about three weeks. It is also astonishing how long the patients remain well. So I believe that this method is quite an improvement over our technic.

DR. TRAUB: In his book, Pusey described a case exactly resembling the one shown here, with the lesions over the same sites. He mentioned especially the nipples being involved. The roentgen-ray treatment that Dr. Bucky mentioned is certainly far superior to local treatment of individual lesions.

DR. HIGHMAN: I should say that the slide was typical. If this is a case of myelogenous leukemia, it is about the fifth case reported in the literature.

LEUKEMIA. Presented by DR. BECHET.

M. L., a woman, aged 35, had been presented at the last meeting as a case for diagnosis. She had come to the clinic a day or two previous to that meeting, and sufficient time had not elapsed for careful observation or laboratory research. At that meeting, on clinical grounds alone, Dr. Whitehouse and Dr. Stokes made a tentative diagnosis of sarcoid, which diagnosis was also favored by the presenter. The lesions consisted of infiltrated, copper-red plaques, extremely sharply defined, but neither indurated nor nodular. These lesions occupied the areola of both breasts. The nipples were not retracted. The plaques had been present for six or seven years, and had developed slowly. There was a mild eczematoid dermatitis on the body. An examination of the blood showed: red blood cells, 4,000,000; white blood cells, 8,500; lymphocytes, 55 per cent, and polymorphonuclears, 45 per cent. Sections showed an extremely diffuse infiltration of cells that extended from the upper corium almost as far as the hypoderm. The cellular infiltration spread between, and broke up the bundles of connective tissue. This infiltration consisted of lymphocytes. Some of the blood vessels were dilated, but there were not any changes in their walls.

DISCUSSION

DR. HIGHMAN: It is a remarkable case, and the slide is distinctive of a new growth, I think. There is certainly hyperplasia of lymphatic cells in the lymphatic spaces and among the collagen fibers. I should not want to commit myself to the belief that this is leukemia of the skin, but neither can I be sure that this is lymphosarcoma, although I believe it is. When it comes to differentiation in these borderline cases between leukemia, lymphosarcoma and the so-called mycosis fungoides of Brocq, the distinction is extremely difficult to make; in fact Brocq said he thought that probably all cases of mycosis fungoides were probably lymphosarcoma. It is my belief that this is lymphosarcoma.

DR. BUCKY: I agree entirely with Dr. Highman as far as the differential diagnosis of leukemia and lymphosarcoma is concerned; but I want to call attention to the fact that in practically every case of lymphosarcoma the mediastinal space is involved and shows enlarged glands.

PARAPSORIASIS EN PLAQUES. Presented by DR. BECHET.

A man, aged 65, had had for an indeterminate time several large, characteristic, reddish to yellowish-brown, moderately scaly patches, distributed generally over the arms, legs and trunk. The lesions were not infiltrated, and did not show a tendency to undergo involution. Subjective symptoms were not present.

PURPURA ANNULARIS TELANGIECTODES (?). Presented by DR. BECHET.

P. K., a man, aged 35, stated that his dermatosis had begun three months before presentation. On inspection, a generalized eruption was noted on the arms, trunk and legs, seemingly more extensive on the arms and legs. It consisted of large, yellowish-brown patches with little if any scaling, and a tendency to annular formation. These patches were distinctly telangiectatic at their periphery, with hemorrhagic puncta at their outskirts.

DISCUSSION

DR. MACKEE: The eruption appears to be progressive. Majocchi's purpura is characterized by exacerbations and remissions and each attack is divided into three distinct stages. I do not think that the features in the case are sufficiently characteristic to permit a diagnosis of purpura annularis telangiectodes.

DR. MALONEY: I think that there are undoubtedly purpuric spots in these lesions, and that the diagnosis of Majocchi's purpura is more probably correct than parapsoriasis. I do not think that it is parapsoriasis.

DR. HIGHMAN: It is hard to commit oneself in a case of this sort in three minutes. I think that it is parapsoriasis; the patch form type. There is reason for confusion in the differentiation between this type of parapsoriasis and Majocchi's purpura. In cases which are frankly parapsoriasis, capillary dilatation and hemorrhage are often seen.

DR. BECHET: I greatly appreciate the discussion. In a way it has outlined my own views of the case. When I first observed the patient, I believed that the diagnosis was parapsoriasis, but on closer inspection the lesions were distinctly hemorrhagic, and could not be pressed out with the diascope. There is a tendency to annular formation, and there are distinct outlying hemorrhagic puncta, particularly noticeable on the forearms. For these reasons I favor the diagnosis of Majocchi's purpura.

ACNE VARIOLIFORMIS. Presented by DR. FOX.

F. H., a clerk, aged 37, born in the United States, had suffered from an eruption confined to the face for three years. The lesions were bilateral on the entire face, profuse in amount. Some were active; the majority, however, consisted of deep pitted scars. The active lesions were the size of a pea, dull, reddish nodules, in various stages of necrosis. Histologic examination showed the picture of tuberculosis.

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C. Guy Lane, Secretary, 416 Marlborough St., Boston.
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SECTION ON DERMATOLOGY AND SYPHILOLOGY, SCIENTIFIC ASSEMBLY, AMERICAN MEDICAL ASSOCIATION

Jay Frank Schamburg, Chairman, 1402 Spruce St., Philadelphia.
William H. Guy, Secretary, Jenkins Arcade, Pittsburgh.
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